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OIL AND GAS

ASSESSMENT OF CONDITIONS, PROBLEMS AT BUZACHI PENINSULA OIL FIELD

Alma Ata NARODNOYE KHOZYAYSTVO KAZAKHSTANA in Russian No 6, Jun 83 pp 15-17

[Article by special correspondent T. Katelkina: "The Important Buzachi Oil" under the heading: "Behind a Line of the Decisions of the 26th CPSU Congress"]

[Text] "..... To broaden geological exploration operations for oil in Western Kazakhstan and to accelerate the exploitation of the oil deposits on the Buzachi peninsula."

/From the basic directions for the economic and social development of the USSR in the years 1981-1985 and the period up to 1990/

In the annals of the oil and gas producing administration "Komsomol'skneft" which is developing the deposits on the Buzachi peninsula, the 29th of August 1979 is a special date. On that day foreman Kusherbay Alibayev opened the valve on one of the wells of the Kalankas deposit and into the country's river of oil poured the first commercial oil from Buzachi.

So began a new stage in the development of the petroleum industry of the Mangyshlak territorial production complex. Here, on the Buzachi peninsula it is projected to obtain an essential increase in the black gold in the 11th Five-Year Plan.

The extraction of the first Buzachi oil was not entrusted to the brigade of Kusherbay Alibayev by chance. This collective more than once has appeared as the victor in socialist competition and was awarded the challenge Red Banner and the Honorable Diploma of the production association "Mangyshlakneft". This very brigade, for the exploitation of the petroleum deposits of the Buzachi peninsula, was awarded the "Badge of Honor".

The brigade of Alibayev provides a clear example of an enthusiastic and a creative relationship to its work. An interest in total success compels its people to search constantly for ways to increase the production of the black gold.

In the third year of the Five-Year Plan, as usual, the brigade is obtaining high stable results in the work. And in the part of the oil-field which the brigade serves, the drilling of new wells is no longer being done and the working wells are more and more being converted to the rod-pump method of extraction. Therefore, each above-plan ton of oil is being obtained by the utilization of inherent reserves.

The brigade searches for reserves persistently and constantly. Here, for example, test unit No 3 was transferred into the group. What did that do? The start of the new grouping permitted increasing by 250 tons per day the extraction of the valuable raw material from the 23 wells.

The brigade's constant attention to the use of the operative collection of wells will give good results. Since the beginning of the year this collective produced more than 4,000 tons of oil above the plan.

Side by side with the oil extractors, the allied workers are working well too. On the Buzachi, the brigade of Malik Baldekov is well known. In only the first quarter of the year this leading collective drove 2,986 m of drilling footage and gave more than 700 meters above the plan.

While in this year on the Buzachi deposit 3 million 700 thousand tons of liquid fuel will be produced, in 1984 it will be 4 million 300 thousand tons. By the end of the Five-Year Plan it will be over 5 million tons. Such a rate of growth meets present day demands.

At what expense will that be possible?

In the first place it will be due to an increased amount of drilling work in the development of new deposits. A widespread application of new methods of stimulating the strata contributes to production growth.

Buzachi petroleum, lying under saline swamps, has a unique composition. It is metalliferous, containing great quantities of vanadium which is used in the production of alloy steel. It lies at comparatively shallow depths from 300 to 1000 meters. But its extraction, because of high viscosity, is very difficult. The usual classic methods of developing deposits which are used in industrial countries are not applicable under Buzachi conditions. Here, for the first time in domestic practice, new methods of development are being carried out on an industrial scale.

At the Kalamkas deposits, for example, the problem of driving out the oil will be solved in a new way. A system for maintaining reservoir pressure by the addition to injected water of polyacrylamide as a thickening agent will begin to work here. The viscosity of the injected liquid should approximate the viscosity of the oil for an even "pushing" of it toward extraction wells. Scientists have established that the usual maintenance of reservoir pressure by injecting simply water extracts no more than 15-20 percent of the oil from formations. But injection of thickened water increases it to 30-36 percent. To select an efficient ratio of the liquid and the polyacrylamide, a test section on the injection of polymers is in operation at the deposit.

In the current year it is planned to produce more than 300,000 tons of oil by the use of this method.

At the Karazhanbas deposit, for the first time in the country, oil production will be done from the very beginning of development by the application of intrastratal wet-burning and steam heat stimulation. For this, two test sections have been created here.

The use of such methods of stimulation at Karazhanbas was dictated by the properties of the oils in the deposit. They are heavy oils with high viscosity and they solidify at a temperature as high as plus 20 C.

The relatively low stratal temperature of the deposit and the features of the geological characteristics of the oil do not permit obtaining an oil extraction coefficient of more than 0.2 without the use of thermal methods. The use of intrastratal wet-burning and steam-heat stimulation allows the achievement of an extraction coefficient of up to 0.45-0.51.

At the steam-heat stimulation section, the injection of high pressure steam has been provided for through specially drilled steam injection wells of special design. In the experimental section for wet-burning, the process of injecting air with subsequent ignition of the oil strata by means of special equipment is being carried out. Both of these methods lower the viscosity of the oil in the formation and increase extraction. By their use 250,000 tons of liquid fuel will be produced this year.

In connection with the use of the new methods of stimulating a formation, a problem arises in providing water for the deposits. Without it we cannot, today, manage either drilling, in which water is needed to prepare drilling muds, nor oil extraction where it is used for maintenance of reservoir pressure. But under the conditions at Mangyshlak, water has always had special importance.

At Kalamkas, for example, it is manifestly insufficient. And this is understandable. Scores of wells are being put into operation. Many of the working wells have ceased to flow and are being converted to mechanized methods of extraction. In these conditions, increasing the extraction of oil from the formation or stabilizing production is impossible without a dynamic development of a system for maintaining reservoir pressure.

Where to take water for Kalamkas? The resources of the Albian-Senomanian stratum whose water is now being injected are limited. And they are limited in many respects because today, reliable and efficient equipment for water wells is not available. The oilmen have solved this problem by beginning to use sea water to maintain reservoir pressure. But they do not use it as in Uzen where sea water is injected directly into the formation. The subject is contour flooding of the Kalamkas deposit with sea water. All this has permitted increasing the injection of water from 7,000 m³ to 9,000 m³ per day.

To provide process water for maintaining reservoir pressure at the Buzachi deposits there are plans to complete construction in 1984 of an experimental water intake on the peninsula's west coast. A year after beginning use, its output will have been brought up to 50,000 m³ of water per day.

To cover the sea water shortage this year, there are plans to activate 26 Albian water intake wells at Kalamkas.

The water supply will be substantively improved by the start-up of the water pipeline, now under construction, from the Volga to Mangyshlak. It will deliver 260,000 m³ of water per day to deposits at Buzachi, Uzen, and Zhetybay.

Specialists consider the Buzachi peninsula deposits difficult not only because a unique petroleum is deposited there, but also because the structure of the formations containing it is sandy. This hampers the operation of equipment, and the intraoil field pipelines become choked with sand. The problem of stabilizing wells which are being drilled to relatively shallow depth has become problem number one.

To solve it many industrial scientific research institutes have been brought in - the main All-Union Scientific Research Institute on Stabilizing Wells, the association "Soyuztermneft'" [expansion unknown], the trust "Mangyshlakneftefizika" [expansion unknown], and the KazNIPIneft' [Kazakh Scientific Research and Design Institute for Petroleum?]. Measures are being worked out for improving quality of well stabilization. Being considered for these purposes are: a search for new stabilizing materials, improvement of well design, and technological regulations for the drilling and development. Various bottom-hole filters are being tested, and the stabilizing of critical wells with chemical reagents which limit the entrainment of sand from wells is being done. Unfortunately, a final solution for this problem has not been found.

But until the question of the well stabilizing is removed from the agenda, it is impossible to talk about efficiency in the exploitation of the deposit. With a 60 percent stabilizing quality of all available wells, there is much to be desired.

At Buzachi large capital investments are being assimilated for equipping the petroleum deposits. Also this is being done over a comparatively short period of time. While in 1981 about 44 million rubles of capital investment was assimilated here, in 1985, more than 53 million rubles will be assimilated. Today, hundreds of wells have been drilled at the deposit and the following facilities have been built: an oil pipeline, a high-voltage electrical transmission line, intra-facility pipelines for the collection and transport of oil, and industrial, cultural, and domestic facilities. This has created a base for further intensive development of the deposits. During the 11th Five-Year Plan it is planned to assimilate more than 225 million rubles of capital investment.

Today at Buzachi an army of drillers, oilmen, builders, and truckers is working. The millions in capital investments are being assimilated by their hands which are working, in the final analysis, for the important Buzach oil.

It must be said that the people are laboring under complex conditions. The Kalamkas deposit, once upon a time, was the bottom of the Caspian Sea. The soil here is marshy. In winter the cold is aggravated by sharp winds from the sea. In summer there is suffocating heat and dust storms rage. In addition to all that, this region has few amenities, and it is far removed from populated places.

All this has dictated the necessity of introducing the watch work system. People come here on the average for two weeks. Then they return home, relax for the same amount of time, and return again to Buzachi. Such a system brings to the exploitation of the peninsula's deposits specialists not only from Shevchenko, Uzen, and Zhetybay but also from Mangyshlak, Stavropol and Krasnodar.

They live in villages where all the conditions have been created for rest after a stressful work day. The prefabricated houses are equipped with air conditioning and in winter are well heated. High quality furniture creates maximum comfort. A repeater station makes it possible to watch the Central Television programs in color. In the spacious club there are parties, discotheques, and meetings with interesting people. The department of propaganda and agitation of the Mangyshlak Party obkom takes care that the workers' leisure time is interesting.

The workers on duty are served by two dining rooms, a store where they can acquire the necessities, and showers and baths are at their disposal. A bakery is being built which will always put fresh baked goods in the dining room and snack bar.

In the next year it is planned to build another club. A sports hall is being constructed, and, at Karazhanbas - four five-story apartment buildings.

Care about people has been elevated to the rank of law in our country. Therefore, comfortable hostels and the arrival of well known writers and creative groups are becoming customary. The Mangyshlak obkom of the Communist Party of Kazakhstan gives most intent attention to seeing that the people working in the difficult Buzachi conditions do not experience shortcomings.

At one of the recent meetings of the bureau of the Party obkom the question about strengthening labor and production discipline in the oil and gas producing administration "Komsomol'skneft" was considered. Specific measures were mapped out for equipping and exploiting the Buzachi peninsula deposits. To coordinate the activities of the enterprises and organizations occupied with these questions and also to solve the problems connected with improving services to the oilmen of the peninsula, an oblast operational staff was set up.

The aid to the workers of Buzachi proposed by the obkom of the Party is extremely timely. They have numerous problems which they are not capable of resolving alone. Thus, from year to year a question is raised about the quality of construction work. The general contractor - the trust "Mangyshlakneftegazstroy" [Mangyshlak Oil and Gas Construction trust] - responds to the just demands of the oilmen only with promises.

Continually the date for commissioning facilities is put off. Today, for instance, a group pumping station is extremely urgent. But to count on it that the construction will be completed before the third quarter is futile. The collective of the oil and gas producing administration "Komsomol'skneft'" is working steadily and successfully and is coping with the plan. In the past year more than 100,000 tons of oil above the plan was produced. In its commitment the collective undertook: "to give 142,000 tons of liquid fuel above the Five-Year plan."

In its work, however, there are some difficulties. An alarming situation has built up in personnel work.

There are at present 47 young specialists in the administration. Only 14 of them are holding engineer and technician positions. The remainder are counted as laborers. Unquestionably, this is good experience for young engineers, but prolonging it can deprive people of the desire to work. "The creation of a reliable reserve of personnel was, and still remains, an important task," - so said the current report of the CPSU Central Committee of the 26th Congress of our Party. Precisely from such a position should the work with young specialists be conducted. Based on their business qualification, it is necessary to let the recent graduates of higher educational institutions work as specialists. With their knowledge and already available conditions they unquestionably can be of great use.

A high personnel turnover is observed from several parts of "Komsomol'skneft'". In 1982, 129 people were dismissed and 370 persons accepted for work. The turnover coefficient is 0.26. Such a situation can have a negative effect on the results of labor, if not after one year, after two.

The leadership of the administration is puzzled by the situation and is searching for ways to eliminate the personnel turnover. It is understood that it is impossible to resolve that problem in a short time. Possibly a commission should be created to uncover the reasons why people are leaving the enterprise, to conduct a sociological inquiry of the whole staff, and then specifically and persistently eliminate the deficiencies. The rate of growth of oil production dictates its own conditions and, first of all, a tight rhythm of work and a high output from everyone at his own work place. These complex tasks today can be shouldered only by a stable, united, collective.

* * *

From the assets of the 11th Five-Year Plan, about 1,000 new wells will be put into operation at the Buzachi deposits. This will permit the oilmen to step over the 2 million ton mark in 1985. Subsequently the rate of growth of production will rise.

There is a great future for the deposits of the Buzachi peninsula. And those problems which the Mangyshlak oilmen are solving today will become the strong base for it.

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COAL

SYNOPSIS OF ARTICLES FROM UGOL' UKRAINY NO 4, APRIL 1983

Kiev UGOL' UKRAINY in Russian No 4, Apr 83 pp 47-48

UDC 622.01:65:611.52

REDUCTION OF MANUAL AND HEAVY UNSKILLED LABOR AT ENTERPRISES OF THE
DONETSKUGOL' ASSOCIATION

[Synopsis of article by A. M. Rud', pp 2-3]

[Text] Changes in the level of manual labor at mines of the Donetskgol' Association in connection with the mechanization and automation of production processes. Comprehensive programs for the reduction of manual labor at mines and in the association. Measures for insuring the implementation of this program.

UDC 622.01:658.3

YOUNG SPECIALIST IN THE COAL INDUSTRY

[Synopsis of article by A. M. Tikhonov, pp 3-4]

[Text] Results of a sociological survey of young specialists in the UkSSR Coal Industry. Proposals for retaining and successfully adapting specialists to the sector. Two tables.

UDC 622.232.8.001.86:551.2/.3

WORK EXPERIENCE OF THE KOMSOMOL-YOUTH SECTION NO 6 AT MINE NO 13-BIS

[Synopsis of article by N. P. Kal'chenko, pp 5-6]

[Text] Work experience of the section where the outstanding comprehensive brigade led by A. A. Korolev is working. Two illustrations.

UDC 622.61.658.387.61

FULFILLMENT OF SOCIALIST OBLIGATIONS AT 'KOMMUNIST' MINE

[Synopsis of article by I. F. Pavlenko and V. I. Shetik, pp 6-8]

[Text] Main work indicators at the "Kommunist" Mine in the Oktyabr'ugol' Association for 2 years of the 11th Five-Year Plan. Socialist obligations at the enterprise, fulfillment of plans and obligations. Three illustrations.

UDC 622.232:658.387.4

1,000-TON LOAD PER WORK FACE IS NO BARRIER

[Synopsis of article by Yu. D. Blinokhvatov and N. M. Yasinovskiy, pp 8-11]

[Text] Techno-economic indicators of a longwall equipped with a KM-87UME complex. Work organization at I. V. V'yunik's brigade. Three illustrations.

UDC 622.001.8:65.012.6

ON THE INITIATIVE, PERSONAL CONTRIBUTION OF SECTION LEADER A. P. ZORIN TO THE COLLECTIVE'S ACHIEVEMENT

[Synopsis of article by N. A. Gavrilov, pp 11-12]

[Text] Progressive work methods at the collective of Section No 3, led by A. P. Zorin, at the "Kharitsyzskaya" Mine, Oktyabr'ugol' Association. One table, two illustrations.

UDC 622.273.217.5

PZE COMPLEX FOR FILLING IN WORKED OUT AREAS AT MINES

[Synopsis of article by V. N. Churakov, p 13]

[Text] PZE complex at the "Komsomolets Donbassa" Mine, Shakhterskantratsit Association. Problems. One illustration.

UDC 622.274.526.48

PROTECTION AND SUPPORT OF WORKED OUT AREAS BY ARTIFICIAL SUPPORTS MADE FROM MONOLITHIC FAST SETTING MIXTURES

[Synopsis of article by P. N. Voskoboyev, O. S. Anosov and M. F. Malyuga, pp 14-15]

[Text] A new method for supporting worked out areas by artificial supports. Crushed rock obtained from excavated spaces of working faces or from developmental tunnels is used as an aggregate. Three tables.

EVALUATING BEHAVIOR OF SURROUNDING ROCK DURING EXCAVATION OF STEEP SEAMS

[Synopsis of article by R. A. Frumkin and A. S. Podtykalov, pp 15-17]

[Text] Methods for predicting roof cave-in, main roof rate of settling and the degree of convergence of surrounding rock in steep seams for geological exploratory and planned mining operations. Three tables.

UDC 622.831.322

BREAKING INTO EXPLOSIVE COAL SEAMS IN DEEP MINES

[Synopsis of article by M. I. Bol'shinskiy, Yu. T. Khorunzhiy, I. S. Fridman, pp 18-19]

[Text] Analysis of requirements for excavation of explosive seams in the Central region of the Donbass. Reliability and extent of explosion prevention measures. Area of application, parameters, technology, and results of industrial inspection of method of opening seams based upon washing of coal blocks. One table, two illustrations, one reference.

UDC 622.268.13

OPTIMAL SECTION AREAS FOR EXTRACTION DRIFTS

[Synopsis of article by V. N. Tkachenko, pp 20-21]

[Text] Substantiation of the necessity of expanding the area of extraction drifts in deep horizons to the optimal size. Methodology for the comprehensive optimization of excavation parameters, methods of working, protection and support conditions. Two references.

UDC 622.33.013

EVALUATION OF TECHNICAL STANDARDS AT MINE SURFACE OPERATIONS

[Synopsis of article by Ye. I. Vyatkin, pp 22-23]

[Text] Evaluation of technical standards at mine surface operations with the help of a technical standards coefficient. Coefficient values for all surface processes. One table, one reference.

UDC 622.013:658.531:622.26

LABOR INTENSITY OF PRODUCTION PROCESSES IN DRIVING DEVELOPMENTAL TUNNELS WITH COMBINES

[Synopsis of article by V. A. Karmazin, pp 23-24]

[Text] Labor intensity of driving developmental tunnels. Area of effective use of PK-3p and PK-9r type combines. One table, one illustration.

UDC 622.272:658.264.26

IMPROVEMENT OF HEAT SUPPLY TO MINES

[Synopsis of article by M. B. Romanovskiy, pp 24-25]

[Text] Mine steam power operations and their shortcomings. Suggestions for improving mine heat supply. One reference.

UDC 621.63:622.44

EVALUATION OF TECHNICAL STANDARDS, QUALITY OF MINE VENTILATORS

[Synopsis of article by I. A. Raskin, pp 25-26]

[Text] New methodology for evaluating the technical standards and quality of main and local ventilators. Analysis of group of indicators for ventilator evaluation.

UDC 65.011.54:622.273.23

DEVELOPMENT OF COMPREHENSIVE MECHANIZATION FOR WORKING SEAMS BY LONGWALLS IN THE PNR [POLISH PEOPLE'S REPUBLIC]

[Synopsis of article by Ya Schemin'ski, pp 27-30]

[Text] Machinery and equipment for mechanizing longwalls extraction methods used in PNR mines. Five tables, six illustrations.

UDC 622.7-52

COMPREHENSIVE EQUIPMENT FOR AUTOMATION OF PROCESSES AT PREPARATION PLANTS

[Synopsis of article by V. A. Ul'shin, N. S. Serdyuk and D. N. Kopanitsa, pp 31-33]

[Text] Development and production introduction of such equipment, its functional potentials, and effect from introduction during 11th Five-Year Plan. Four illustrations.

UDC 622.7:622.333

EFFECT OF COAL ASH CONTENT ON QUALITY OF PROCESSING PRODUCTS

[Synopsis of article by A. M. Kotkin, A. A. Zolotko, G. F. Sabel'nikov, pp 33-35]

[Text] Analysis of effect of changes in coal fractional composition on the quality of processed products. Measures for perfecting processing technology in order to improve product quality when there is increased rock content in initial coal. One table, one illustration.

MULTICHANNEL THICKENER FOR FLOTATION WASTES

[Synopsis of article by A. F. Kondratenko, A. N. Shuliko, A. F. Zinchenko, pp 35-36]

[Text] Study of the operation of a multichannel thickener with sloping plates for thickening flotation wastes at the TsOF [Waste flotation] operations at the "Belorechenskaya" Mine. Its advantages compared to thickeners of other types. Two tables, one illustration.

UDC 622.232.72-118-83

SMALL EXPLOSIONPROOF ELECTRIC MOTOR FOR 'POISK' COMBINE

[Synopsis of article by V. N. Stadnik, A. V. Maslyuk, L. B. Landkof, pp 36-37]

[Text] Small explosionproof electric motor for the "Poisk" combine, used for working very thin, steep seams. Its basic technical characteristics and testing results. Two illustrations.

UDC 622.284.5:622.232

TESTING MECHANIZED SUPPORTS FOR KD-80 COMPLEX

[Synopsis of article by I. A. Kiyashko, N. P. Ovchinnikov and I. A. Kotlyarskiy, pp 37-39]

[Text] Results of mine testing of KD-80 supports at the "Ternovskaya" Mine, Pavlogradugol' Association. Actual power, geometric and kinematic parameters and their correspondence to design parameters. One table, two illustrations.

UDC 622.231.051.7

TOOL FOR DRILLING BORE HOLES IN AVERAGE STRENGTH ROCK

[Synopsis of article by A. N. Moskalev, V. M. Tkachenko and V. A. Popkov, p 39]

[Text] Operating principles of the D-2SU, D-3S, and RPKh drilling tool for power rotary drilling. Results of experimental-operational drilling with these tools at Donbass mines. One table.

UDC 622.625.5:625.34

MONORAIL TRANSPORT WITH DIESEL POWER

[Synopsis of article by Ya. V. Shchukin and V. R. Sheynin, p 40]

[Text] Characteristics of foreign monorail lines, basic data on the 2DMD diesel powered monorail developed by Dongiprouglemash.

UDC 622.647.1:539.4.011.25

IMPROVING THE QUALITY OF CONNECTION LINKS OF SP-63 CONVEYER

[Synopsis of article by V. I. Alimov, I. A. Perederiy and N. P. Shapovalova, p 40]

[Text] Possibility of improving SP-63 scraper conveyer links made from 35KhGSA steel through the use of stamp heating for heat treatment. One table.

UDC 622.817.9:661.184.35

ON CONTROL OF GAS EMISSIONS IN MINES

[Synopsis of article by M. V. Popov, p 41]

[Text] Results of research on the direction of cleavage fissures in seams, and the effectiveness of their degasification. One illustration.

UDC 622.831.3:622.235

MANAGEMENT OF WORKFACE SECTION WITH BURST-PRONE COAL SEAMS

[Synopsis of article by A. N. Zorin, V. G. Kolesnikov and A. P. Klets, p 42]

[Text] Mine test results on active state of face sections in developmental workings where there is a danger of rock bursts. Discusses potential of managing activity through relief of coal seam loading in face section.

UDC 622.81.01.57

FLOW PARAMETERS OF GAS MOVING IN SHOCK WAVE IN ROUGH CHANNEL

[Synopsis of article by A. M. Chekhovskikh, p 43]

[Text] Methodology for calculating parameters of gas particles flowing in a shock wave front in a mine tunnel.

UDC 622.52

ERROR ESTIMATION IN MEASURING MINE WATER FLOW

[Synopsis of article by I. P. Chigrinov, p 44]

[Text] Formulas for error estimation in measuring water flow using portable weirs at Donbass mines.

RELATIONSHIP OF BENCH SIZE AND RATE OF GROWTH TO SETTLING OF THE SURFACE

[Synopsis of article by V. A. Boyev and S. F. Chizhikov, p 45]

[Text] Quantitative characteristics for the Central Donbass region to the growth rate of bench height upon the rate of subsidence, which is predictable.

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11574

C89: 1822/287

OTHER SOLID FUELS

NEW FORMALINE SECTION BUILT AT KIVIOLI SHALE-CHEMICAL PLANT

Tallinn RAHVA HAAL in Estonian 5 Jul 83 p 2

[Article by RAHVA HAAL correspondent Mati Kalkun: "Smooth Cooperation Is Needed"]

[Text] A new formaline section is being built at the Kivioli Oil Shale Chemical Plant, scheduled to begin operations this year. The project will cost 12.3 million rubles, including about 6 million rubles for construction and installation. Furniture combines, nurseries, kolkhozes and sovkhoses, meat packing plants and other enterprises are impatiently waiting for the completion of the formaline section and for the increased production of this chemical. The new plant will produce more formaline than the current three plants put together.

The main construction contractor is the Kohtla-Jarve Construction Trust. Work began in 1981. After the first quarter of this year the construction is lagging considerably behind the planned extent. But thanks to the exertions of the workers of the 6th construction administration of the Kohtla-Jarve Construction Trust and the Kivioli Mechanized Construction Department the situation finally improved considerably, and the second quarter's plan was met. Still it gives cause for concern to see that up to now the workers work on only one shift, since there are not enough personnel for other ones. Construction preparation for specialized subcontractors is lagging. The chief contractor should act more vigorously so that the "Koksokhimmontazh," "Sevzapelektronontazh," and the "Montazhtermoizolyatsiya" trusts could use their capacities fully. In several construction sectors the installation is slowed by unfinished general construction items that are in themselves not very voluminous--such as painting the interiors or installing lighting.

The construction is up to now without quality control; major project faults, however, require immediate attention. A quality control representative should be present at least twice monthly. Since the contracting organization is located in Novosibirsk it is obvious that such things cannot be rectified by the use of telephone and telegraph alone.

Up to now valued at 8 million rubles has been completed, including 3.7 million rubles for construction and installation. The planned indicators

have been met. Unfortunately, the Kohtal-Jarve construction workers have lately gotten in the habit of completing first the most costly projects and thus meet the plan. Less valuable jobs with small volumes are usually left for the last quarter (these jobs often are time-consuming) and all too often some of them are not finished by the time the project is transferred. Up to half a year can pass from the time that the project is put on line until things are more or less in order. In addition, the management of the construction trust seems to hope from the very start of the project that in the concluding phases auxiliary help will be sent from the enterprises and agencies of the town.

There is absolutely no agitation at the formaline construction site. The activity of the construction organizations is insufficiently coordinated, as is cooperation with the client. According to the client's representative, engineer Vladimir Batanov, the subcontractors are requesting such materials from the clients that should be obtained by the installation organizations themselves. The client has enough trouble receiving the semi-finished installations and putting these in working order.

One cannot say that the project is neglected--each Thursday Uno Kiudsoo, ESSR deputy minister of Construction, comes to a staff meeting; representatives of the client's main administration also pay visits. But a smooth cooperation between the main contractor and the subcontractors, the client and other interested parties is still far off.

Half a year remains until the formaline sector comes on line. Work must be managed so that this time will be used to maximum efficiency.

9240

CSO: 1815/12

OTHER SOLID FUELS

NEW HANDBOOK ON PEAT REVIEWED

Moscow TORFYANAYA PROMYSHLENNOST' in Russian No 7, Jul 83 p 31

[Review by A. M. Andrzheyevskiy of book "Spravochnik po torfu" /A Peat Handbook/. Edited by A. V. Lazarev, candidate of technical sciences, and S. S. Korchunov, doctor of technical sciences, Moscow, Izdatel'stvo "Nedra", 1983 /?/]

[Text] The "Nedra" Publishing House has published "Spravochnik po torfu" /A Peat Handbook/ edited by A. V. Lazarev, candidate of technical sciences, and S. S. Korchunov, doctor of technical sciences.

Since the time of the publication by Gosenergoizdat in 1954 of the last "Peat Handbook," under the general editorship of N. I. Samsonov, I. Ye. Belokopytov, and V. S. Varentsov, almost 30 years have passed. The changes which have occurred in the peat industry over these years required the publication of a new handbook, reflecting the present-day status of science and peat production.

The group of authors and the editorial collegium have performed a great deal of work in systematizing the enormous amount of material reflected in the Handbook.

The Handbook contains 25 chapters, in which are concentrated materials characterizing the qualitative traits of peat and peat deposits, the physical-mechanical properties of peat and the mechanics of peat deposits, the qualitative characteristics of peat products presented to the consumers during the years 1960--1981, the USSR's peat resources, the present-day level of preparing a peat deposit for exploitation, the characteristics of the equipment being used, the basic requirements for the engineering processes involved in extracting and processing peat, problems of transportation, safety equipment, fire-prevention measures, and the economics of peat production.

With regard to the problems listed above the Handbook cites information not only on the engineering processes and equipment being used widely in the industry, but also those which have been adopted for the industry but which have not yet found use in practice.

The Handbook consists of brief paragraphs, each of which, as a rule, contains material on a single problem. Such a structure facilitates use of this book and ensures the rapid finding in it of the necessary information on questions of interest. For example, the material on the cutting method has been divided into

7 chapters and 47 paragraphs, whereas in the 1954 Handbook it was set forth in only two chapters and 16 paragraphs.

The new Handbook on peat sets forth in greater detail the problems of preparing and especially repairing the production areas; it is on the technical state of these areas that the degree of utilizing the weather possibilities for drying peat depends to a large extent.

The Handbook pays a great deal of attention to peat output for agriculture, which is one of the principal trends of using peat at the present-day stage. The book cites data on all types of peat products being used for growing vegetable crops, flowers, etc. This will facilitate the popularization of peat and the expansion of its use in the given direction.

Elaborated here in detail is the production of peat briquets as communal-domestic fuel; its use should be significantly developed during the next few years.

The new Handbook examines on a broader basis the problems of labor protection in the peat industry; this meets the growing needs for combating production injuries and occupational diseases.

Questions of the economics, planning, and administration of the peat industry are set forth in a special chapter, since at the present-day stage a great deal of attention is accorded to them.

Publishing of the Handbook on peat will facilitate a further rise in the technical and scientific level of conducting the engineering processes in the peat industry, the quality of the product, and the lowering of the labor consumption and production cost of the latter. The Handbook on peat will make the work of the engineers and technicians in the peat industry more intelligible in a technical sense.

While noting the great value and timeliness of the publication of the Handbook on peat, we cannot help but note certain shortcomings:

This handbook lacks a section entitled "Organization of Repair Work" with norms for the outlay of material and spare parts for repairs. The presence of this section in the handbook's 1954 edition rendered great assistance to workers in enterprises, both those engaged in the production of repair work as well as comprising a basis for requisitions for materials and spare parts.

Also lacking are diagrams and descriptions of field bases, warehouses of fuel and lubricating materials, as well as a description of the procedure for organizing engineering maintenance and ensuring the production of fuel and lubricating materials.

There is no special section on electric-power supply and electrical equipment for peat enterprises.

The section entitled "Maintenance of Cut Peat" indicates the presence in the SM7-1 automatic installation of an SB-1M impulse-type meter, which has already been taken out of production.

The working diagram of the stacking machines (Fig. 12, 16) does not indicate the operation of the machine for setting up the butt-ends of the stacks.

The basic statutes on organizing the repair of production areas should have included the methods of quality control over the operations being conducted.

The diagram of the disposition of the loads of cut peat (Fig. 8, 10) indicates the unloading of the hoppers from the end-part of the harvesting machine, which requires additional time and decreases productivity. In actuality, unloading takes place while the harvesting machine is moving along the entire front of unloading.

The following points should also be noted regarding the section entitled "Fire-fighting Units and Equipment":

In Note 2 to Table 22.2 it is indicated that NKF-94 pumps can be replaced by others with the same degree of effectiveness. It should be pointed out that the number of pumps has been recalculated, taking their productivity into account, since there is no such exact characteristic for pumps.

In the note to Table 22.2 it should have been pointed out that the NKF-94 pumps are mounted on the DT-74-75 tractors with the aid of a crossover plate, and a drawing of this should have been provided.

On page 696 in the list of equipment and tools for extinguishing forest fires it would have been desirable to indicate the brand name of the "gear-type pumps."

It would have been feasible to note the possibility for installing on one DT-74-75 tractor the following two pumps at the same time: the NKF-94 with a drive mechanism from the power-selection shaft and the NCHN-600 in front with a drive mechanism from the engine shaft.

Mention should have been made of the possibility of utilizing engineering equipment to create moistened zones retarding the spread of a fire.

Section 25.11 ought to have provided a structure of the apparatus for administering a production association and an enterprise.

The remarks indicated above do not decrease the overall value of the Handbook on peat, which will be extremely useful for workers in production, science, and educational institutions.

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CSO: 1822/312

OTHER SOLID FUELS

SYNOPSIS OF ARTICLES FROM TORFYANAYA PROMYSHLENNOST' NO 7, JULY 1983

Yazovaya TORFYANAYA PROMYSHLENNOST' in Russian No 7, Jul 83 p 32

[Text]

UDC 553.97:626.86.001.5

S. S. Korchunov, Ye. Ye. Petrovskiy, V. Ya. Sologub, G. Ye. Tetel'baum, "Estimating the Degree of Dryness of Production Areas in Extracting Cut Peat," TORFYANAYA PROMYSHLENNOST', 1983, No 7, pp 10-13.

Set forth here are the results of studies made on the influence of the degree of dryness of the upper layer of a deposit (0--2 cm) on the process of extracting various types of cut peat. Data are cited on the connection between the degree of dryness and the moisture content. Studied here is the influence of the surface topography as shown on maps and the principle of variation in the degree of dryness during the days with a positive value of the coefficient of cyclicity. It describes the influence of the degree of dryness of the production areas on the engineering indicators of extracting cut peat. It makes suggestions with regard to decreasing the influence of hydrological conditions on the production process.

Contains 4 tables and 1 illustration.

UDC 622.331:634.0.30/37

L. M. Maikov, P. S. Ponomarchuk, N. M. Veselov, et al., "Number of Engineering Operations and Quality of Removing Wood Inclusions from a Deposit," TORFYANAYA PROMYSHLENNOST', 1983, No 7, pp 13-16.

Developed here is a methodology for selecting the optimum number of operations to be performed by the MTP-81 and MTP-22A machines, according to the criterion of the minimum total specific labor outlays for the process of peat extraction and repairing the surface of the production areas.

Contains 4 illustrations and a bibliography with 6 titles.

UDC 622.331.622.271

A. Ye. Afanas'yev and G. A. Arkhipov, "Method of Operative Control of Peat Moisture Content," TORFYANAYA PROMYSHLENNOST', 1983, No 7, pp 16-18.

Developed here are a new optical method and an instrument (in the infra-red area of the spectrum $\lambda = 0.76\text{--}3.3\text{ }\mu\text{m}$) for measuring the moisture content of peat and other dispersions and capillary-porous materials.

Contains 4 illustrations and a bibliography with 3 titles.

UDC 662.812

M. A. Galkin, V. Ye. Genshaft, A. I. Zakablukov, V. A. Tsarev, "Studying the Process of Peat Briquetting as an Object of Automation," *TORFYANAYA PROMYSHLENNOST'*, 1983, No 7, pp 19-20.

Cited here are the results of investigations conducted on the statics and dynamics of the process of peat briquetting as an object of automation. Provided here is the matrix of correlation coefficients and the correlation ratios between the investigated characteristics of peat and the pressing parameters, as well as the mathematical models for controlling the given engineering process.

Contains 1 table and a bibliography with 4 titles.

UDC 622.331:631.8

V. V. Smirnov, Ye. A. Shchepitin, "Production of Peat Blocks by the Pressing Method," *TORFYANAYA PROMYSHLENNOST'*, 1983, No 7, pp 21-22.

Shown here is the influence of increasing the specific surface of peat blocks by means of pressing the grooves and holes at the moment of formation on the moisture content of the product, the intensiveness and duration of drying. Use of the pressing method allows a 20--25-percent increase in the production of peat blocks while reducing their production cost.

UDC 553.97:550.8

A. N. Oleinik, "Differentiation of Peat-Bog Territories by Prospects for Their Study, Geological Investigation, and Development," *TORFYANAYA PROMYSHLENNOST'*, 1983, No 7, pp 24-26.

Examined here are the principles of dividing up the peat-bog territory of the USSR for the most rational planning of geological investigative operations and the development of peat resources.

UDC 665.36+665.47

N. E. Greshko, A. F. Mikhnenok, Ya. V. Koloskova, "Investigation of the Physical and Chemical Properties of Raw Peat Waxes," *TORFYANAYA PROMYSHLENNOST'*, 1983, No 7, pp 26-27.

Provided here are the physical and chemical characteristics of peat bitumens, extracted by gasoline from pine-cotton-grass peats.

G. A. Perezhney, Yu. I. Sedov, "Dust Conditions in the Interior Areas of Peat-Briquetting Plants and Methods for Investigating Them," TORFYANAYA PROMYSHLENNOST', 1983, No 7, pp 27-29.

Characterized here are the de facto dust conditions at peat-briquetting plants. The article cites methods for measuring, processing, and placing them in isoclines, based on the theory of mathematical statistics.

Contains 3 illustrations.

ИЗДАТЕЛЬСТВО: Издательство "Недра", "Торфяная промышленность", 1983

234

СД: 1322/312

SECRET

CEMA-BUILT TEST REACTOR COMMISSIONED IN CSSR

PM161203 Moscow PRAVDA in Russian 15 Sep 83 First Edition p 5

[Report by own correspondent S. Vtorushin: "Reactor Commissioned"]

[Text] Prague, 14 Sep--An experimental reactor, whose construction took place within the framework of the CEMA countries' cooperation, has been commissioned at the Nuclear Research Institute located in (Rzhezh) near Prague.

This installation was created in the close cooperation of Czechoslovak and Soviet scientists. It is intended for research into so-called standard cartridges--the fuel elements used in nuclear power stations. Previously, similar experiments were conducted on cartridge models. The new installation allows the real processes taking place inside a nuclear power station's reactor to be reproduced, and more accurate results obtained. With its help it will be possible to determine potential methods of increasing nuclear stations' efficiency, and ways of raising their output of electric power. These statistics will be used in nuclear electric power station design.

Scientists from the USSR and other CEMA countries will, within the framework of the cooperation program, be conducting experiments at the reactor along with Czechoslovak specialists.

NO: 1822/4

PIPELINE CONSTRUCTION

DEPUTY MINISTER SUDOBIN COMMENTS

MOSCOW SOTSIALISTICHESKAYA INDUSTRIYA in Russian 29 Jul 83 p 1

[Article: "Victory on the Right-of-Way"]

[Text] The mid-point of the five-year plan has been marked by the workers of the Ministry of Construction of Petroleum and Gas Industry Enterprises with an outstanding labor victory. Ahead of schedule, outpacing the increased obligations by approximately half a year, they have completed the line construction-installation work on the entire 4,451-kilometer length of the right-of-way of the Urengoy-Pomary-Uzhgorod Export Gas Pipeline. The country's largest fuel-energy mainline is ready to accept gas throughout its entire length.

Here is what was communicated to us with regard to this matter by the Deputy Minister for the Construction of Petroleum and Gas Industry Enterprises, /G. Sudobin/ [in boldface and all caps].

"For the first time in the practical experience of Soviet as well as world pipeline construction such results have been attained. During a period of only slightly more than a year the line part of the current five-year plan's main fuel-engineering structure, the Urengoy-Pomary-Uzhgorod Gas Pipeline, has been completely laid. Moreover, about half of its length has already been put into operation and is providing gas to the Ural regions, the Volga Region, and the Central Industrial Region. For this purpose the Urengoy Gas-Condensate Deposit has put into operation two super-power installations for the comprehensive preparation of gas with an annual productivity of 20 billion cubic meters each.

"Also of essential importance is the fact that the mainline is being introduced into operation by stages. This ensures a high degree of effectiveness and a rapid return on capital investments. Success has also been based on the work of improving the economic mechanism with an extensive introduction of a standardized, continuous contract, as well as the growth of the power-worker ratio, comprehensive mechanization, and the educational and party-organizational work supporting these achievements.

"Operating on the right-of-way were tens of comprehensive, engineering, flow-type assembly units, furnished with highly productive Soviet equipment, including heavy pipe-laying units produced by the Sterlitamakskiy Construction

Machinery Plant. In their engineering characteristics they are not inferior to the well-known American "Caterpillar" machinery, the deliveries of which from the United States have been cut off because of President Reagan's so-called sanctions.

"We succeeded in attaining outstripping rates not only on the line section but also in building the compressor stations, the start-up of which is provided for in the current year. Despite the exceedingly complex working conditions, high rates are characteristic of all six Siberian gas pipelines. The first of these, the Urengoy-Gryazovets-Moscow Gas Pipeline, was put into operation ahead of schedule and as far back as the first year of the five-year plan. Like the following one, the Urengoy-Petrovsk Gas Pipeline--which was also put into operation earlier than the planned deadline--during the year in which it was started up it achieved its plan capacity. This has now become the norm, although the world standards provide for the attainment by pipelines of the planned productivity after two or three years.

"The extensive construction program has been fulfilled since the beginning of the five-year plan--by 40 percent more than during the corresponding period of the 10th Five-Year Plan. Some 28,000 kilometers of long-distance pipelines have been put into operation, along with 154 compressor and pumping stations with a capacity of 6 million kilowatts. Apartment houses have been built with a total area of 4.2 million square meters, of which 2.3 million square meters are in Western Siberia. And the main thing is that labor productivity in construction has amounted to 121 percent; it has exceeded the level established for the end of the five-year plan.

"The groups within the organizations and enterprises of the Ministry of Construction of Petroleum and Gas Industry Enterprises are toiling to fulfill the tasks of the third, core year of the five-year plan, having developed on a broad basis a socialist competition to celebrate in a worthy manner the 80th Anniversary of the Second Congress of the RSDLP [Russian Social Democratic Labor Party] and the 25th Anniversary of the movement for a Communist attitude toward labor. In the Urengoy-Tomary-Uzhgorod Right-of-Way the best results were achieved by the groups of comprehensive engineering assembly-units, under the leadership of V. Ya. Belyayeva, A. F. Pen'yevskiy, A. G. Tsay, V. F. Radchenko, and S. I. Matenko, who emerged on several occasions victorious in the competition to fulfill weekly and daily tasks. They hold the records for the export right-of-way--a kilometer and more of completed pipeline per day."

234.

CSO: 1822/339

PIPELINE CONSTRUCTION

MINISTRY OFFICIAL COMMENTS ON EXPORT GAS PIPELINE CONSTRUCTION

Moscow TRUD in Russian 10 Jul 83 p 1

/Interview of Grigoriy Nikolayevich Sudobin, deputy minister of the USSR Ministry for the Construction of Petroleum and Gas Industry Enterprises: "Urengoy-Uzhgorod Gas Pipeline: The Lead Section is in Operation!"/

/Text/ Yesterday a meeting was held in Urengoy, which was dedicated to a solemn event: the completion of the lead section of the export gas pipeline, which passes through the Soviet Union on its way to Uzhgorod. In the near future pipelaying work will be coming to an end within the USSR. For now, the eighth and ninth comprehensive gas treatment units (UKPG) and the first 1,500 kilometers of the pipeline have been put into operation.

Thus, gas has commenced feeding into the pipeline. V. Karpov, a Trud correspondent, has asked G.N. Sudobin, a deputy minister of the USSR Ministry for the Construction of Petroleum and Gas Industry Enterprises, to comment on this event.

"I remind you that six gas pipelines have their beginning in Urengoy. One of them goes to the western border and on into Europe. The others go to various populated areas of the Soviet Union. The Urengoy-Moscow, Urengoy-Petrovsk and the Urengoy-Novopskov gas pipelines were built and put into operation at rated capacity during the current five-year plan. The Urengoy-Uzhgorod export gas pipeline is not only the longest at 4,451 kilometers but also the most important in terms of its economic and political value.

"The Urengoy gas deposit is one of the largest. What the people have accomplished here is unparalleled. For example, the UKPG units are among the most powerful in the world. And what about the quality of control? Automation, remote control and computers. The essential processes such as drying and cleaning the gas of dust and contaminants are controlled by machinery. Picture a large, modern plant - this is how the enterprises that we modestly call UKPG's look.

"The pace of the construction has exceeded the projected schedules. The lead section, which was put into operation yesterday with an evaluation of 'excellent', has for all intents and purposes been constructed within a single winter season! And the exclamation point is entirely appropriate: past experience in building at this speed is unheard of. Many labor records were broken during the construction of this pipeline. Up until now, for example, the pace of building gas pipelines was 50 kilometers per year per spread organization on the average. The new record was 100 kilometers. Past records have become the norm and then these, too, are broken."

/Question/ "And what is the secret of this success?"

/Answer/ "Briefly, it was the people, the organization of labor and the socialist competition. At the start of last year a Coordinating Council was created under the All-Union Central Trade Union Council for the development of a competition in the construction of mainline gas pipelines. The council became a true headquarters, coordinating the activities of the sectoral trade unions and promoting specific and effective cooperation among the economic organs. This very council headed up the work in organizing the socialist competition on the 'workers' relay race' principle. There was no single important question that was not studied by the Coordinating Council: safeguarding labor, improving living conditions, organizing a well-defined cooperation among the related organizations, and monitoring the fulfillment of contracts."

/Question/ "An important economic experiment is being conducted at the construction site. What does it represent?"

/Answer/ "In essence it is as follows. The construction of the pipeline was entrusted to some 50 spread organizations. They were provided with all necessary equipment. We combined into a single spread those crews that are engaged in preparation operations - clearing trees, leveling and grading. In another spread we had those who do welding, insulating, pipelaying and restoring the land to its original state. The acceptance document for a strand of pipeline was signed only after all operations were completed. The work of a spread is carried out on the basis of a single work order. The workers, engineers, technicians, maintenance people and even those in charge of the settlements work toward the final goal. It would seem a small thing if the sheets were not laundered - but this meant a cut in pay. If a new movie film was not delivered on time, then this, too, was reflected in the paycheck of whoever was responsible."

"Pay was strictly pegged to the number of kilometers of the pipeline that were laid, rather than the way it was before when the welders were paid for welding and the excavator operators were paid for digging the trench, and so forth."

"I want to emphasize an important aspect. The spread chief is in charge of all workers, regardless of the subcontracting or general contracting organization in which they might be working. And all of this has proven itself."

/Question/ "What is the nature of equipment available to the spreads?"

/Answer/ "The spreads have quite a bit of equipment. Excavators, bulldozers, and pipelayers, including the ETR-254 rotary excavators. But that is not all. The spreads are supplied with the Tyumen swamp vehicles, which are manufactured in the Soviet Union, with a carrying capacity of 30 tons. In cooperation with scientists from the Institute of Electrowelding imeni Ye. Paton and specialists from other organizations and institutions of higher learning the unique 'Sever-1' unit was created; this unit by itself can replace dozens of welders. The mobile and also domestically manufactured x-ray unit, known as the Parus, helps to quickly and reliably check a welded seam. Many other pieces of equipment are being used here.

"Work is organized in a new way, a solid technical foundation and a union with science have made it possible to achieve a record output. The spreads of V. Belyayeva from a welding and installation trust, A. Bekoshetov from Severtruboprovodstroy, V. Maslakov from Novosibirsk truboprovodstroy and I. Shaykhutdinov from the Tatnefteprovodstroy were particularly outstanding."

/Question/ "What sort of difficulties were encountered in building the pipeline?"

/Answer/ "It passed through 26 oblasts. It starts in a permafrost zone within the Polar Circle. In its path we ran into some 700 kilometers of swamps and flooded sections, the Ural and Carpathian mountains, 560 water barriers, including such mighty rivers as the Ob, Volga, Kama, Dnepr and Dnestr. The total length of the underwater crossings amounts to 200 kilometers.

"And here are some other data which characterize the scope of the construction project. The volume of earth moving work amounts to 130 million cubic meters. This, by the way, is the equivalent of four to five Volga-Don canals. If one were to place the earth that was removed in a two-meter layer, it would cover an area equal to Lichtenstein. The total weight of the materials (reinforced concrete and metal structures and pipes) just for the Urenгой to Uzhgorod section is four million tons. In terms of capital construction the construction of the pipeline surpasses such giants as the VAZ, /Volga Auto Plant/, the BAM /Baykal-Amur Railroad/, KamAZ /Kama Truck Plant/ and Atomash combined. Without an exaggeration this is a scientific-technical leap into the third millennium.

"It is funny to remember the so-called sanctions, which President Reagan and his administration sought to impose. This decision was unsupported not only from a political point of view, for it undermined international cooperation, but also from an economic point of view. And the ban on the delivery of pipe and equipment to the USSR was harmful to both American firms and to their European partners."

/Question/ "Could we build this gas pipeline without the participation of Western firms?"

/Answer/ "Let us put the question into focus: not just this pipeline, but all of the gas pipelines. In other words, could we manufacture the pipe, equipment and everything else? It is no secret that such pipes, and the machines for laying them and the compressor equipment is manufactured by the Soviet Union. I would like to emphasize that the program for the development of pipeline transport is quite extensive in the Soviet Union. In the current five-year plan we are to construct more than 40,000 kilometers of gas pipelines alone. This means that we need 40 million tons of 1,420 mm diameter pipe. So to speed up the realization of this extensive program we must make partial use of imported equipment and materials."

/Question/ "Arrangements for the living conditions and recreation of the builders became very important when one is faced with a task of this size."

/Answer/ "Of course. And we have attempted to organize the living conditions and leisure of people without any reductions for the severe climatic conditions. All of the problems have been dealt with comprehensively. Some 50 settlements to accommodate 500 to 600 men have been erected along the path of the pipeline. In the workers' cities everything necessary has been provided. There are dining halls, stores, a post office, baths and consumer service facilities. We have sent cassette recording of radio-newspaper broadcasts made specially in Moscow for the builders to the settlements that have been equipped to receive radio signals. This has meant that the pipeline construction workers were always kept up to date on current events. In several of the settlements evening schools were created for the young people. And the work of the visiting branches of the technical schools and institutions of higher learning was organized. All of this was done so that the pipeline builders did not interrupt their schooling even during the most pressing times."

"The construction project is continuing. I am confident that it will attain new records."

8927
CSO: 1822/321

PIPELINE CONSTRUCTION

DEVELOPMENT OF SLURRY PIPELINING

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 8, Aug 83 pp 49-52

[Article by Ye. Olofinskiy, director, All-Union Scientific Research and Design Institute for Slurry Pipelines: "On Development of Slurry Pipeline Transport"]

[Text] The decisions of the 26th CPSU Congress specify further development of this country's transportation system. In connection with an eastward shifting of the fuel and raw materials base, accelerated development of pipeline transport is targeted. In addition to conveying crude oil, natural gas, natural gas condensates, ammonia and other liquid and gaseous products, in the future pipelines are to be used to move coal and ore concentrates from the mines to thermal electric power stations and large metallurgical enterprises, primarily along those shipping routes where rail lines are greatly overloaded.

In the last 5 years technical-economic calculations have been performed on the basis of research and development conducted by the USSR Academy of Sciences, All-Union Scientific Research Institute of Combined Fuel and Energy Problems (VNIKTEP) and the USSR Gosplan Institute of Combined Transport Problems (IKTP) on planning this country's fuel and energy balance, as well as analysis of diagrams of transport linkages and balance-sheet calculations conducted by the institutes of USSR Minugleprom [Ministry of Coal Industry], Minchermet [Ministry of Ferrous Metallurgy], Minenergo [Ministry of Power and Electrification], and Minudobrenii [Ministry of Mineral Fertilizer Production], substantiating the advisability of establishing in the Soviet Union trunk slurry pipeline systems for coal and ore concentrates.

According to the figures of VNIKTEP, in the future plans call for altering the structure of this country's fuel and energy balance in the direction of bringing steam coal into use, the principal resources of which are located in Siberia. This institute, with participation of organizations of USSR Minneftegazstroy [Ministry of Construction of Petroleum and Gas Industry Enterprises], Minenergo, RSFSR Minrechflot [Ministry of the River Fleet], and USSR Minvuz [Ministry of Higher and Secondary Specialized Education], has conducted research and reached a conclusion that it is becoming more cost-effective to move Kuznetsk steam coal to the Urals and the European part of the USSR by slurry pipeline than by rail, assuming a shipped coal volume of approximately 25-30 million tons per year and more. With an increase in slurry pipeline coal volume from 25 million to 75 million tons per year, its economic effectiveness increases from 1 to 6 rubles per ton of coal delivered to the

customer on the average for the entire system. Effectiveness of a coal slurry pipeline system in comparison with rail hauling is even greater in physical indices.

Minneftegazstroy's VNIIPtransprogress [All-Union Scientific Research and Design Institute for Advanced Transportation Engineering] has computed the following comparative figures on delivery of Kuznetsk coal to the Southern Ukraine (Table 1).

Table 1.

(1) Показатель	(2) Доставка	
	(3) по трубопроводному транспорту	(4) по железной дороге
(5) Протяженность, км	4 800,00	5 100,00
(6) Капитальные вложения, млн. руб.	3 200,00	4 200,00
(7) Эксплуатационные расходы, млн. руб.	300,00	520,00
(8) Удельные приведенные затраты, руб/т	13,00	19,00
(9) Энергозатраты, млн. кВт·ч в год	10 070,00	6 700,00
(10) Металлоемкость, млн. т	1,95	5,45
(11) Численность обслуживающего персонала, чел.	2 200,00	65 000,00

Key:

- | | |
|---------------------------------------|--|
| 1. Indicator | 7. Operating costs, million rubles |
| 2. Shipment | 8. Specific calculated outlays, rub/t |
| 3. By slurry pipeline | 9. Electric power consumption, million kilowatt hours per year |
| 4. By rail | 10. Metals input, million tons |
| 5. Distance, km | 11. Number of operating and service personnel |
| 6. Capital investment, million rubles | |

Virtually complete automation of all processes in a slurry pipeline system, including the system of preparing coal for shipping and subsequent combustion, ensures a significant reduction in labor outlays for system operation in comparison with rail hauling.

Other countries have had experience in the area of designing, building, and operating coal slurry lines.

According to a design developed by the Italian companies Finsider, IRI, and Snam Progetti, the cost of building a coal slurry line approximately 5,000 kilometers in length, 1,420 mm in diameter, to move 60 million tons of semicoke per year, runs 7.6 billion dollars. System service life is 30 years. The preliminary design of an experimental commercial-scale coal slurry pipeline between Belovo and Novosibirsk, a distance of 250 kilometers, is based, just as the Italian design, on a process specifying moving coal with a concentration in the slurry of up to 50 percent by weight, and particle size to 1 mm. This process, which is employed on the Black Mesa slurry pipeline currently operating in the United States, includes dewatering and additionally reducing the coal at the power plant prior to combustion.

The Snam Progetti and Salzgitter (FRG) companies have developed a new process which involves pumping a highly concentrated water-coal or water-methanol-coal suspension containing 70-75 percent coal by weight, with solid particles to 150 microns in size. In order to get the suspension flowing more freely, approximately 0.5 percent of a special surface-active agent is added. Approximately 10-15 percent methanol in the mixture guarantees that it will not freeze at temperatures down to -40°C . This process has significant advantages. In particular, it eliminates complicated and costly facilities for dewatering and preparing the coal for combustion and reduces abrasive wear on pipes and equipment. Special research is needed, however, in order to determine the technical potential and economic advisability of its employment under our country's conditions.

Also meriting attention are the results of research conducted by the Salzgitter Company, on the basis of which a process has been developed for future slurry pipelining coal with an optimal solid particle size to 6-8 mm. An advantage of this process is the low cost of preparing the coal for transport and particularly of dewatering it.

Slurry pipelining ore concentrates, in contrast to coal, does not require the building of additional complex systems for preparing the ore pulp for slurrying. Therefore the area of its application is virtually unrestricted by size of quantity to be moved or length of haul. And the expediency of actually building each designed pipeline should be considered in relation to the degree to which rail lines are overloaded in a given area, water availability, and other specific conditions.

A pipeline has been in operation for 5 years now in Krivoy Rog, a line 3 kilometers in length and putting through approximately 2.5 million tons of iron ore concentrate each year. A 26-kilometer pipeline went into operation in January 1983. It is conveying iron ore concentrate from the Kursk Magnetic Anomaly (KMA) Lebedinskiy Mining and Beneficiation Combine to the Oskolskiy Electrometallurgical Combine imeni L. I. Brezhnev. The first months of commercial operation have confirmed the viability of the selected engineering solutions and the operating reliability of the process equipment.

In 1980-1982 Minneftegazstroy's VNIIPtransprogress, jointly with institutes of USSR Minchermet, developed materials substantiating the practicability of building slurry systems for moving iron ore concentrate to the Yasinovataya Sintering Plant in the Donbass from Krivoy Rog and to the Novolipetskiy Metallurgical Plant from the KMA Stoylenskiy Mining and Beneficiation Combine.

A comparison of the technical-economic indices of shipping ore concentrate by slurry pipeline and by rail (beefing up the rail line by enlarging yards and doubletracking on some stretches) is presented on the following page (Table 2).

Preliminary estimates have also been made on the basis of consolidated indicators of the effectiveness of building trunk pipelines for conveying ore concentrates from the Kola Peninsula (iron ore, apatite, nepheline) to industrial enterprises in the northwest part of the European USSR. We present on the following page the results of comparative estimates of effectiveness of

Table 2.

(1) Показатель	(2) Транспортная система Кривой Рог — Довбас		(3) Транспортная система Стойленский ГОК — Липецк	
	трубопровод (4) км	железная дорога (5)	трубопровод (4) км	железная дорога (5)
(6) Протяженность, км	370,00	470,00	220,00	292,00
(7) Капитальные вложения, млн. руб.	139,90	172,60	58,00	60,00
(8) Эксплуатационные затраты, млн. руб.	13,30	18,20	8,70	13,90
(9) Превозимые затраты, млн. руб.	34,30	44,10	17,50	20,40
(10) Себестоимость транспортирования сухо- го концентрата, руб/т	0,97	1,33	1,27	2,02
(11) Численность обслуживающего персонала, чел.	180,00	2600,00	96,00	1200,00

Key:

- | | |
|---|--|
| 1. Indicator | 7. Capital investment, million rubles |
| 2. Krivoy Rog-Donbass transportation system | 8. Operating costs, million rubles |
| 3. Stoylenskiy MBC-Lipetsk | 9. Calculated outlays, million rubles |
| 4. Pipeline | 10. Cost of transporting dry concentrate, rubles per ton |
| 5. Railroad | 11. Required workforce |
| 6. Length, km | |

employing pipelines in comparison with rail transport (Table 3).

Table 3.

(1) Показатель	(2) Трубопровод	(3) Железная дорога
(4) Протяженность, км	1100—1300	1300—1500
(5) Капитальные вложения, млн. руб.	650—750	1200—1400
(6) Эксплуатационные затраты, млн. руб.	55—60	80—100
(7) Себестоимость транспортирования сухо- го продукта, млн. руб/т	2,5	3,5—4
(8) Численность обслуживающего персонала, чел.	850—950	1100—1200

Key:

- | | |
|---------------------------------------|---|
| 1. Indicator | 6. Operating costs, million rubles |
| 2. Pipeline | 7. Cost of transporting dry product, million rubles per ton |
| 3. Railroad | 8. Number of operating personnel |
| 4. Length, km | |
| 5. Capital investment, million rubles | |

in view of the great economic and social significance of accelerated solving of this country's transportation problems on the basis of adoption of scientific

and technological advances, measures have been elaborated for more extensive adoption of slurry pipelines for conveying coal and ore concentrates in various sectors of the economy.

USSR ministries and agencies as well as union republic councils of ministers, beginning in 1983, are to incorporate in programs for development and location distribution of sectors of the economy and branches of industry the employment of trunk slurry pipeline systems for coal, ore-metallurgical raw materials, and other products.

Construction of trunk slurry pipeline systems on a turnkey basis, as well as the functions of lead ministry in the performance of research, development and survey activities connected with the building of these systems have been assigned to Minneftegazstroy.

A number of ministries and agencies have been instructed to submit to USSR Gosplan materials substantiating the practicability of designing and building trunk slurry pipeline systems for coal, iron ore, apatite and nepheline concentrates, as well as raw materials for the manufacture of mineral fertilizers, to various parts of the country (to the Urals and Volga, the Ukraine and Kazakhstan, into the central and northwestern areas of the European USSR).

Among specified projects, emphasis should be placed on the Kuzbass-Urals-Volga-Ukraine coal slurry line, construction of which should be preceded by research and design activities to settle problems connected with establishing the structure of this country's fuel and energy balance. These questions include primarily the following: detailing possibilities of additional utilization of Kuznetak coal in the country's fuel and energy balance in the coming 20 years, taking into account the cost of mining, transporting and utilizing coal; comparison of the efficiency of slurry pipelining with hauling coal by rail, as well as with transmission of an equivalent amount of electric power by ultrahigh voltage power transmission lines (exceeding 2000 kilovolts).

One of the principal conditions for execution of the specified program calling for adoption of slurry pipelining of coal and ore concentrates in the nation's economy is construction of the requisite process equipment. Proceeding on this basis, the machine building ministries have been instructed to design, build and test in 1983-1985 experimental commercial-scale models and commence series production on modular-design slurry pumps with an operating pressure of 100 kg/kv/cm, agitator tanks with a useful capacity of up to 2000 cubic meters, special pressure sensors, wear-resistant control and safety valve fittings, as well as drafting proposals pertaining to developing facilities and initiating commercial manufacture of equipment for building slurry pipeline facilities.

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PIPELINE CONSTRUCTION

FILLING BEGUN OF GROZNY-BAKU LINE

Moscow *SPETSIALISTICHESKAYA INDUSTRIYA* in Russian 5 Jun 83 p 1

[Article by L. Leont'yeva, special correspondent: "Across the Mountains and Rivers--The Grozny-Baku Petroleum Pipeline Has Begun to Be Filled"]

[Text] Filling operations have begun on the 600-kilometer Grozny-Baku Petroleum Pipeline, which has become the continuation of the Nizhnevartovsk-Kuybyshev-Mishchansk steel mainline. It will allow the uninterrupted and smooth supply of Tyumen petroleum to the refineries of Azerbaijan.

We are at the zero mark of the new petroleum pipeline. From here, at a distance of several kilometers from Grozny, it begins its route through the territories of the Chechen-Ingush ASSR, Dagestan, and Azerbaijan. In vain we attempted to discover even the slightest trace of the usual signs of a construction project. Stretching all the way to the horizon, in the place where until recently builders were moving about with heavy equipment, level, square fields were becoming green, and overhead irrigation sprinklers were in operation.

"Over the length of the entire right-of-way no 'battle scars' have remained, such as those which, even after the passage of several years, still may be noted along the route of the older gas and petroleum pipelines," stated the chief of the Groztrudoprovodstroy Trust, M. Mugadayev. "The planning (it was conducted by the Yuzhgiipronefteprovod) and construction of the Grozny-Baku pipeline proceeded under the aegis of particular attention to environmental protection. As they cut through arable lands, the builders carried out a great deal of preparatory work: they carefully removed the upper, fertile layer of soil so that afterward they could put it back in place evenly again.

In places where this was possible they attempted to go around the numerous orchards, gardens, and vineyards in these areas. The petroleum pipeline cuts through mountains, as well as about 80 large and small streams. Changes in elevation along the right-of-way amount to as much as 700 meters. It is complex not only with regard to the local topography--the right-of-way passes through a corridor which is extremely congested with various types of utility lines. Along its route it encounters approximately 400 of them.

It turned out that adjustments had to be made while the work was in progress: this was caused by special circumstances. Several tens of kilometers from Baku

the builders encountered the remnants of an ancient settlement. The right-of-way soon showed the place of this unexpected discovery. Archaeologists will soon be working here. By the way, during the course of construction and in selecting the optimum variants, the length of this section of the petroleum pipeline, in accordance with the plan, was reduced by some 20 kilometers--thus saving manpower, materials, and shortening the time periods required for construction. Taking part in it were specialized sub-divisions of Glavyuznistrustoprovedstroy from Volgograd, Groznyy, Stavropol, Rostov, and Krasnodar.

The following advanced brigades of installation workers performed work at levels of 1.5-2 norms per shift: those led by A. Polyakov, B. Azhigov, and I. Petrikov, as well as the brigade of insulation workers led by V. Zhul'ga from the Groznyustroproedstroy SMU-3 [Construction-and-Installation Administration].

"This was facilitated by the continuous method, which we adopted for use in building such a complex section," stated the chief of SMU-3, V. Goroshinskiy. "Within this complex we conducted the earthwork, the welding operations, and the insulation-pipe-laying operations simultaneously.... But even at this pace the requirement for high quality was basic. Stringent quality control was carried out."

For the first time a pipeline segment passes through the coastal area of the Caspian Sea and the zone of its environmental protection, congested with pipelines used for supplying drinking water. This circumstance required from the planners and the builders alike the application of special safety measures--extra-thick pipes, trenches up to three meters in depth, the utilization of high-strength, anti-corrosion films.... For the first time cyclical tests were conducted under conditions closely approximating those of operations. These tests demonstrated the high ecological safety of the petroleum pipeline.

In a few days Tyumen petroleum will arrive in Baku by the most rapid, reliable, and economical means of transport--the petroleum pipeline. With the introduction during the third quarter of this year of the main pumping station at Dolinsk, the petroleum pipeline will attain its planned capacities for pumping crude. On the Groznyy-Baku section alone the man-made petroleum river will free up more than 2,500 railroad trains per year.

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Pipeline Construction

PIPELINE CONSTRUCTION PROGRESS REPORT

Moscow *SOKHALISTICHESKAYA INDUSTRIYA* in Russian 1 Jul 83 p 1

[Article by V. Sokhfel'd, engineer of the Glavsishtropovedstroy: "Northern Kilometers Completed!"]

[Excerpt] A great labor victory has been gained by the builders of the Tyumen section of the Urengoy-Uzhgorod Gas Pipeline. Having successfully completed start-up operations, they have, a half-year ahead of the plan deadline, prepared for operation 1,043 kilometers of the export mainline--only slightly less than one-fourth of the entire Soviet part of the right-of-way.

The most difficult section of the gas pipeline has been completed, laid through remote tundra and tundra. Enormous distances separated the construction columns from the supply bases. The route was blocked by 400 kilometers of swamps, as well as by tens of large and small rivers. Nevertheless, the sub-divisions of the Ministry of Construction of Petroleum and Gas Industry Enterprises successfully overcame them.

These northern kilometers did not come as any wondrous surprise to the Tyumen workers. You know, the Uzhgorod line is the 10th mainline which has been laid to the gas-storage facilities of Yamala. What distinguishes it from the preceding rights-of-way?

"From the viewpoint of construction tactics--nothing," stated the chief of Glavsishtropovedstroy, N. Kurbatov. "And the fact that it would be completed did not evince any doubts. Previously, the groups of this main administration scarcely used to manage to lay 700--800 kilometers of gas pipeline during the winter, and this is the principal construction season in our region. But now, during this same time period, they complete much more: 350 kilometers of the Urengoy-Novopetrovsk Mainline, and then 733 kilometers of export line. And this under conditions of an unprecedentedly warm winter."

Our partners also considered it their duty to reduce the construction time periods to the minimum on a project of such special importance. The sub-divisions of Glavvostoktropovedstroy and Glavtropovedstroy laid more than 300 kilometers of the mainline.

And here at the Tyumen section is a state commission to accept the gas pipeline for operation. The builders will pass the "exam." They are confident that they will pass successfully. Here they hold dear their workers' honor. For several years in succession now the group of the Communist V. Muradov has received only "excellent" marks in installing complex crane assemblies. The installation workers have also turned over structures without a single defect on the export mainline. Nor do the machine operators of A. Perekhrenst need inspectors. Even before going out onto the right-of-way they firmly resolved that there would be no deviations whatsoever from the plan. And they kept their word.

Just a burst of labor among the workers relied on engineering calculations and the far-sighted solutions by the commanders of production. The directors of the right-of-way, even those of high rank, as a rule, are not stay-at-homes. For example, the chief of the Priob'truboprovodstroy Trust, I. Sukharev, by helicopter, motor launch, in the cab of a pipe-hauling truck, and sometimes even on foot, tirelessly investigated the right-of-way and selected the sites suitable for construction well ahead of time. And he is far from being an exception.

As a result, even during the past year the Tyumen workers were able to develop in the new taiga corridor urban-type settlements, production bases, and even to lay tens of kilometers of "pipe." The accelerated pace of operations was guaranteed by the mass utilization of technical innovations, the progressive organization of labor--flows of technology which left after them a mainline completely ready.

In one of the construction administrations of Nadym one's eye is struck by a sign reading "Comrades! Your section of the right-of-way is the responsibility of the chief of the Industrial-Transport Department of the CPSU Gorkom, V. Zagudayev. His telephone number is...."

"This is surely one of the forms of operational ties with the right-of-way workers," commented the first secretary of the Nadym Party Gorkom, A. Ryabchukov. "The staff, created within the gorkom, used to examine on a daily basis a wide circle of problems: the organization of food service, everyday and medical service, as well as the leisure of the builders. The staff members used to constantly drive out to the production sectors, and they would immediately react to any alarm signals from the people."

The entire country aided in the construction. Industrial enterprises speeded up their fulfillment of requisition orders from the Tyumen workers. The motor pools of the Perm, Chelyabinsk, Tyumen, and other oblasts sent 2,000 truck drivers to help the right-of-way workers.

For literally several months, over a section of steel track which was not even turned over for operations, the railroad workers threw into the Urengoy region approximately a million tons of freight. Tens of thousands of hours were spent in the air by helicopters in supplying all the necessities to the remote points of the right-of-way. To a large extent, this determined their success.

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PIPELINE CONSTRUCTION

KARPAT-VERETSKIY SECTION REPORT

MOSCOW SOTSIALISTICHESKAYA INDUSTRIYA in Russian 12 Jul 83 p 1

[Article by A. Fedorenko: "On the Mountain Slopes"]

[Text] One of the highest points of the Karpat-Veretskiy Pass has been surmounted by the builders of the No 2 Comprehensive Engineering Assembly-Unit of the Zaktruboprovedstroy Trust. Construction of the Western Section of the right-of-way has entered upon the concluding stage.

The segment of the gas pipeline in Transcarpathia is comparatively modest in size--108 kilometers, but what kilometers these are! Some 72 of them pass through mountains with numerous jumps or drops in elevation above sea level ranging from 350 to 1,110 meters and longitudinal grades of as much as 40 degrees. This mainline cuts across the railroad twice and almost 50 times across motor-vehicle roads and small rivers.

At present the assembly brigades are basically "sewing up" the engineering gaps on the right-of-way. We became acquainted with one of them--led by A. Pavlov--at the edge of the village of Podpoloz'ye in Volovetskiy Rayon. The brigade leader turned out to be a convivial person. And before talking about business matters, he shared his happiness with us. His wife had informed him that they had just obtained a three-room apartment with a view of the sea. Pavlov's family lives in the settlement of Lazarevskaya, Krasnodarskiy Kray.

We observed how harmoniously the welders were working. Just like a group of surgeons at an operating table. The electrodes were lit up like the bars of bengal lights. Meanwhile, the fitters were adjusting the centering device on the next joint. Two minutes and it was ready: the trimmed off edges were falling in all directions. After throwing wooden slats under their feet, the welders of the next unit knelt down to do their work. The brigade was extending the thread of the pipeline to the place of the last joint in the technical gap.

Together with Assembly-Unit No 2 of the Zaktruboprovedstroy Trust, the line part of the Transcarpathian pipeline is being built by a sub-division of the Poznan Energy Field. Our Polish friends obtained a level section to work on. But operations here are complicated in their own way. The right-of-way passes through fertile, reclaimed lands. Trenches must be dug quite deep, and ground waters

enter into them. And this causes additional troubles--it is necessary to lay down a considerable amount of ballast and anchoring structures, as well as to pump out the water.

In Transcarpathia construction work is also proceeding on the last compressor station on the gas pipeline's right-of-way. In Volovets it is being built by specialists from the German Democratic Republic. They arrived here a year ago. And immediately after their arrival, at a meeting devoted to getting acquainted with our German friends, the leader of the detachment, R. Videman, declared:

"We will build all the facilities on time and with a high degree of quality!"

The builders from the GDR have been true to their word. In the mountain settlement they have erected two beautiful multi-unit apartment houses. Construction of the other facilities having a cultural-everyday-service nature is proceeding in accordance with the planned schedule. The compressor station is being built at a distance of three kilometers from Volovets. Here, where we are standing, what is essentially a genuine plant is arising, furnished with automatic and remote-control equipment. It will ensure the transmission of a powerful flow of Siberian gas directly to foreign consumers.

We always rode out to the compressor station with the chairman of the Volovets Settlement Council, M. Yaremchuk.

Mikhail Mikhaylovich recalled how once in December of last year a group of leaders of the German builders came to see him in his office.

"Soon there will be a Communist Saturday in honor of the 60th Anniversary of the Formation of the USSR," they said. "And where will we be working?"

"No, we didn't forget about you," Yaremchuk said smilingly.

At that time our friends from the GDR helped us in making improvements on the approach road. They also did a great deal on the Communist Saturday devoted to the 113th Anniversary of V. I. Lenin's Birth.

...From the Volovetskiy Pass one can see for a long distance--for many kilometers. It seems that if you climb even higher, onto the Stoy Mountain, you would even see "Ararat"--that is the name of Settlement No 2 of the Zaktruboprovodstroy Trust, situated not too far from the place where the Urengoy-Uzhgorod Gas Pipeline will come to an end. The gas-pipeline builders, working in Transcarpathia as a unified, friendly family, are doing everything to bring this triumphant hour closer.

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PIPELINE CONSTRUCTION

REPUBLIC GAS TRANSPORT SYSTEM EXAMINED

Baku VYSHEKA in Russian 26 Jul 83 p 1

[Article by R. Verdiyev, chief inspector of the Transcaucasian Regional Inspectorate of the USSR Glavgosgaznadzor and VYSHEKA special correspondent: "A Good Trail"]

[Text] The prospective plan for the development of our republic's gas-transport system for the current five-year plan, along with other start-up projects, provides this year for the introduction into operation of the compressor station of the Biazanskiy Line-Production Administration of Mainline Gas Pipelines of the Aztransgaz Production Association.

With the aid of the newest gas-turbine units, a mighty flow of gas from the Northern deposits will be pumped through this station to the South in order to completely satisfy the needs of the industry and the population of the Transcaucasian republics for the blue fuel. The plan for the compressor station was developed by the group at the All-Union Scientific-Research and Planning Institute for Gas Transport of the Ministry of the Gas Industry.

For the first time on the territory of our republic the new, open type of compressor station is being built for the mainline gas pipelines. The gas-pumping units here will be assembled in separate, box-type blocks, which will completely eliminate the possibility of the rise of dangerous, explosive-prone concentrations of gas and air mixtures when the compressor station is in operation. Also simplified is the design of the auxiliary engineering structures of the station--the principal engineering assemblies will be installed in the form of separate blocks on individual foundations.

Working here are groups of the second mobile mechanized column and the cost-accounting section of the mechanization administration of Trust No 2 of the AzSSR Ministry of Industrial Construction, as well as specialized installation sub-divisions of the Ministry of the Gas Industry and the Ministry of Construction of Petroleum and Gas Industry Enterprises.

Concerning the work of the group of one of these sub-divisions--the installation section of Specialized Administration No 7 of the Tsentralkomplektmontazh Trust of the Ministry of Construction of Petroleum and Gas Industry Enterprises from Moscow--one can say quite a few good words. For example, the workers of this

...the fitters V. Zhidkov, A. Kalinichenko, V. Malozemov, the crane-operator V. Kutankov, and the electric-welder A. Tsukanov, led by their chief, the engineer Semen Stepanovich Shtrunov--within the shortest possible time period erected the multi-ton, gas-pumping units on their footings, and they carried out all the necessary installation work on these units. Let us note that in the construction of the start-up complex, among the builders of this important national-economic project, the installation sub-division of S. Shtrunov from Moscow was the only one whose workers completed the tasks with which they were charged with good quality and on time; so far this cannot be said about the sub-divisions of the republic's Ministry of Industrial Construction.

Ypsen, Urengoy, Surgut, Chelyabinsk, Petrovsk, and Novopskov--this is a far from complete list of the cities where these people have succeeded in building projects for gas transport. But the compressor station in the South was the first such to be built by this brigade, and, therefore, it was immediately faced with the necessity for overcoming additional difficulties connected with the specifics of building facilities under the conditions of the climate and the local topography of the foothills of the Great Caucasus.

Many people are laboring on the future compressor station, but Chief-Engineer S. Shtrunov and his comrades are the ones which you notice right away. Their duties are precisely apportioned among themselves. They work smoothly. Some weld the technical pipelines, others install the unit-assemblies, while a third group skillfully handles the hoisting machinery. And, having completed their work, this group of installation people, without losing any time, began to assemble at the next route: on the Urengoy-Pomary-Uzngorod Export Mainline. But the good trail which it left here in Slazan will be noted for many years to come.

"...such is the principal and most important part of the work on building the compressor station was entrusted to these specialists," stated the chief of the Slazanskly Line-Production Administration of Mainline Gas Pipelines of the Astrakhan Production Association, M. Bayramov, "we are confident that all the equipment will operate without failure."

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USSR: 1972/940

PIPELINE CONSTRUCTION

NATIONAL PIPELINE TRANSPORT SYSTEM EXAMINED

Riga SOVETSKAYA LATVIYA in Russian 9 Aug 83 p 2

[Article by L. Korenev: "The Country's Pipeline Transport"]

[Text] The Soviet Union produces more steel pipes than any other country in the world: approximately 18 million tons per year. For purposes of comparison, this is much more than the United States and the FRG taken together. At the same time the USSR is the leading importer of steel pipes in the world market.

Why do we need so many pipes? The answer, of course, is a simple, straight-forward one: in order to build pipelines. If transport is called, with complete justification, the blood-circulation system of the economy, then it may be compared even more suitably to such a circulatory system with regard to the mode of delivery of various goods: by means of pipes.

Every day in the USSR about 90 million tons of various types of goods are being hauled. For a country which occupies one-sixth of the world's populated land, this comes as no surprise. What is noteworthy is something else: 20 years ago the proportion of pipeline transport in freight hauls in this country amounted to scarcely more than 3 percent, while today this figure is about 30 percent. Thus, pipelines constitute the most dynamic branch of Soviet transport.

Delivering goods by pipelines is an extremely reliable and economical means of transportation: two or three times cheaper than, for example, by railroad. And, in contrast to motor-vehicle, air, and water transport, pipelines do not depend on weather conditions, as do also railroads; under the severe climatic conditions of our country this is a decisive factor. To a certain extent, pipelines are even more suitable for all kinds of weather: you know, even railroads are sometimes hampered by accumulations of snowdrifts.

But all these advantages, naturally, pertain to existing pipelines. However, the economic arguments seem somewhat different when the pipeline still has to be built. The fact of the matter is that a modern-day pipeline is a very expensive structure. In our country, for example, each thousand kilometers of a gas pipeline from Siberia to the European part of the country costs approximately 1.5 billion rubles.

But it makes good practical sense to transport natural gas only by pipelines. And it is precisely the precipitous development of gas extraction in the USSR that has stimulated their construction. Out of 210,000 kilometers which comprise the network of pipeline transport in our country, more than 140,000 kilometers are gas pipelines.

In 1970 the delivery of gas through gas pipelines in our country amounted to a total of 1.5 billion cubic meters (the approximate equivalent to 1.5 million tons of petroleum); in 1970 this figure had already reached 181 billion cubic meters, while in 1981 it had reached 419 billion cubic meters. In 1985 more than 600 billion cubic meters of gas will be extracted.

Gas is winning an increasingly important place in the national economy. With the aid of gas our country smelts 93 percent of all steel and produces approximately two-thirds of the cement; 90 percent of nitrogen fertilizers is obtained from gas. More than 200 million Soviet people utilize natural gas for domestic purposes.

The USSR's integrated gas-supply system encompasses all 15 Union republics. With regard to capacity and energy potential it has no equal in the world.

During the 1980's the system of gas pipelines is continuing to expand at a headlong pace. Their length will increase by almost another 40,000 kilometers. Particularly steep will be the growth in the length of trans-continental gas pipelines made of large-diameter--1,420 millimeters--pipes. Their construction will take place in our country for the first time in world practice. One such pipe with a pressure of 75 atmospheres can transport more gas than was extracted in 1980 by France and the FRG taken together.

But all this does not, of course, remove the question of the high price of gas-pipeline construction and about the precipitous growth in gas extraction itself, whereas everywhere in the world people are talking about the limited nature of supplies of hydrocarbons, i.e., petroleum and gas. D. I. Mendeleev's words to the effect that to burn petroleum is just the same as to stoke your furnace with banknotes have become more and more timely. It is precisely for this reason, as is well known, that "King Coal" has made his entrance on the "stage" again; the supplies of this material in the world are many times greater than the supplies of hydrocarbons.

The USSR has never "frozen" the mining of coal, although each new ton of it has cost it more than a ton of petroleum or a thousand cubic meters of gas. And today, just like the other industrially developed countries, it is placing its future bets on coal (in its reserves the USSR is one of the world leaders) and nuclear power engineering.

But power engineering is a sector which is unusually subject to inertia; decades are required to re-structure it. And, having entered upon a policy of austere economizing on petroleum (without curtailing, to be sure, its extraction), the USSR is utilizing gas as a fuel for the transition period. What must be borne in mind, moreover, is that the re-structuring of power engineering from petroleum

to gas is faster and cheaper than from petroleum to coal, while the supplies of gas in the country are great and allow us to make such a change without detriment to the future needs of the national economy.

The explored reserves of gas in our country, according to 1981 data, amount to 34 trillion cubic meters, which is more than double the amount of reserves of such very large gas-extracting countries as the United States or Iran. Merely the Urengoy deposit in Western Siberia, which is becoming the principal gas-extracting base of the country during the 1980's, exceeds, taken together, the resources of Mexico, Algeria, Canada, the Netherlands, and Britain. It is from here, therefore, that during the current five-year plan six gas pipelines will stretch for a total length of 20,000 kilometers, including the Urengoy-Uzhgorod Export Gas Pipeline with a length of 4,451 kilometers.

The USSR is capable of providing both its own requirements for gas and also exporting it in large amounts for decades to come. Furthermore, its entire export does not exceed 13--14 percent of the total level of extraction.

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PIPELINE CONSTRUCTION

ELECTRIC POWER SUPPLIES FOR URENGOY-UZHGOROD GAS PIPELINE

Moscow PRAVDA in Russian 2 Jul 83 p 1

[Article by L. Kaybysheva: "Energy for the Pipeline"]

[Text] The enterprises and organizations of the USSR Ministry of Power and Electrification are making an important contribution to the construction of the Urengoy-Uzhgorod export gas pipeline. They are expected to construct nearly 2,000 kilometers of new power transmission lines along the pipeline as well as electric power substations and several compressor stations.

The construction of the LEP-110 extending from Nadym-Yugan- Novyy Kazym to Peregrebnoye has been completed.

The main base for the builders of the LEP has been situated in Nadym. From here the work crews travel to the route of the pipeline by helicopter; they live in temporary settlements for two months at a time. Then they go home for a week of rest and then return to the pipeline.

A. Rudoy has worked in the Nadymelektrosetstroy [Nadym Electric Power Network Construction Trust] for more than ten years. Here where the Nadym to the Nadym compressor station LEP is being built, Rudoy has received the Labor Red Banner medal. He has built power lines from the Severnoye Siyaniye [Northern Lights] electric power station to the industrial base of the Urengoy gas field and from Surgut to Urengoy. Each worker in this crew accounts on the average for one and a half times the norm - 250 meters of installed wire per 24 hours.

In the summer it is almost impossible to travel through the swampy tundra and the construction materials are delivered by river to temporary moorings. They are delivered and stored until cold weather arrives. They are brought to the construction site via the so-called "zimniki", or winter roads. Some of the support structures are made as large as possible, are then put together and transported to their final destination by helicopters.

Ye. Korchagin, just as A. Rudoy, came to the North after working in the Yuzhelektrosetstroy /southern electric power network construction trust/ as a MAZa537 driver. He is entrusted with transporting the most important cargoes of heavy equipment. In his powerful Uragan he departs into the tundra for some hundreds of kilometers with his partner. They often run into snow storms and dense fog.

The rocky soil of the roads in the Northern Urals is harder than permafrost. But not even the Uragan can manage each section of such a road; and the tracked bulldozers slide off the mountain slope. Distances are not great here, but each meter of the path is won with great effort. The power line builders and the pipeline builders often help each other.

It is not easy to build electric substations on permafrost. Specialists from the Elektrouralmontazh /Urals electric power network installation trust/ have recommended that the large, standardized construction units, which have been plant readied, be manufactured before hand. At the enterprises of the trust the units are immediately "stuffed" with equipment and fittings so that when they reach their final destination it remains only to install the substation in as little time as possible. In the north of Tyumen Oblast, in the Yamalo-Nenetskiy and Khanty-Mansiyskiy autonomous okrugs nearly 700 kilometers of power transmission lines are being built.

Many construction projects of the electrical network, which will provide electric power for the Urengoy-Uzhgorod gas pipeline, are being completed ahead of schedule. This includes the Pushkari-Algasovo 220 kV LEP in the center of the European portion of the USSR.

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CSO: 1822/321

PIPELINE CONSTRUCTION

CONSTRUCTION REPORT FROM OREL OBLAST

Moscow PRAVDA in Russian 27 Jul 83 p 2

/Article: "Picking Up the Pace on the Pipeline"

/Text/ Dolgoye (Orel Oblast). The construction of the Orel section of the Urengoy-Pomary-Uzhgorod gas pipeline has been completed. It is now ready to accept gas from Siberia. A crimson banner, marking the labor victory of the collective of the Krasnodartruboprovodstroy /Krasnodar pipeline construction trust, waves high in the sky; this trust has completed all of its work some five months ahead of the established deadline.

The builders had to cross two rivers in the winter and during the spring bad roads season; they also had to overcome numerous ravines and gulleys.

The managers of local kolkhozes and sovkhozes have no complaints against the pipeline builders. Where only a month ago there was an enormous mound of dirt that had been removed from the trenches, there is now only a dark strip of tilled earth. The builders have restored hundreds of hectares of land on which this fall winter grains will be planted.

Today in celebrating the completion of the Orel section of the gas pipeline the builders, drivers, installers and heavy equipment operators have assembled.

The entire Soviet Union has built the gas pipeline. Excellent pipes from the Khartsyzkiy Pipe Plant have been laid along the section. High quality equipment has been delivered to the section by the plants and organizations that have worked together from dozens of cities. Tests of the gas pipeline have confirmed the excellent quality of all work.

Those who spoke at the meeting talked about the unanimous desire of the Soviet people to implement the decisions of the November (1982) and June (1983) plenums of the CPSU Central Committee. Everyone expressed confidence that they will fulfill the new assignment of the Motherland with honor - to build the new Urengoy to Center gas pipeline ahead of schedule.

PIPELINE CONSTRUCTION

PIPELINE REPORT FROM NOVYY URENGOY

Moscow PRAVDA in Russian 10 Jul 83 p 1

[Article: "Holiday on the Path of the Pipeline"]

[Excerpt] The head section of the Urengoy-Pomary-Uzhgorod gas pipeline, which passes through Tyumen Oblast, has started operating. Today the 1,043 kilometer stretch of the pipeline accepted gas from the polar regions.

A great labor victory has been won: according to the schedule the section should still be under construction, but it has passed its examination for soundness and hermetic seal with flying colors. "The quality of the welding and insulating work is above reproach", such is the unanimous opinion of the members of the state commission.

The control panel of the crane assembly. The operator pushes a button and the fiery red tongue of the torch flares up: the powerful river of Urengoy natural gas gushed into the underground river. A scarlet banner with the inscription "Motherland, your assignment has been fulfilled ahead of schedule" hangs above those who have assembled.

Altogether it took 200 days, half the amount of time that had been called for by the schedule, to joint the first and final pipe joints on the Tyumen section of the pipeline. The gas pipeline still has not become fully operational. This main portion of the pipeline has become a symbol of the brotherhood of all Soviet people. Hundreds of representatives from the Ukraine, Belorussia, the Bashkir ASSR and the Checheno-Ingush ASSR have asked to be sent to the most complex and head section of the pipeline. Nearly 2,000 large trucks have been sent by Perm and Chelyabinsk to help the northerners. Nearly one million tons of freight and pipe have been delivered to the line by the railroad workers on the Surgut-Urengoy railroad line that is now under construction.

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PIPELINE CONSTRUCTION

URENGOY-POMARY-UZHGOROD GAS PIPELINE OPERATION REPORT

Moscow IZVESTIYA in Russian 10 Jul 83 p 1

/Article by Yu. Perepletkin, IZVESTIYA correspondent: "Urengoy-Pomary-Uzhgorod: The North Has Accepted the Pipeline"7

[Excerpt] There is a big celebration in Novyy Urengoy. The Tyumen section of the Urengoy-Pomary-Uzhgorod gas pipeline has started to operate. Its northern arm covers a distance of 1,400 kilometers, which represents more than one third of the length of the entire pipeline. The industry and populated areas of this enormous region of the Soviet Union has received fuel and valuable raw materials. A major contribution has been made to the further development of the Motherland.

One can now say with total justification that a task of extreme complexity has been completed with honor by the Siberians. Neither the "sanctions" from abroad nor local weather conditions have prevented the pipeline builders from keeping their word to lay a river of steel for the river of natural gas a full six months ahead of schedule. Two comprehensive gas treatment units, each rated at 20 billion cubic meters, have been put into operation.

This past fall, while waiting for the frosts to come and fighting to overcome marshes and the lack of roads, subelements of the construction trusts completed work on the Urengoy-Novopskov gas pipeline and successfully completed a major move (peredislokatsiya) to another work site. This frontline term best of all describes the precision, speed and well-thought-out nature of the maneuver.

The words of the report are heard from the improvised platform and the meeting participants - the insulators and welders, drivers and heavy machinery operators, and engineers and workers - seen once again to pass through those incredibly difficult, plowed and snow covered kilometers. The welding sparks and the northern lights cannot be distinguished one from the other as they flash before the weary eyes of the skilled foremen, winners of the USSR

state prize, B. Diduk and V. Kalenov. Brigade leader Ye. Yaroslavtsev's memory transports him to the edge of a swamp called the "Oibloye" /good-for-nothing/. So much time and nerves went into conquering this swamp! One of the most difficult sections of the pipeline was the 20 kilometers of continuous steep slopes; this task was conquered by the collective headed by K. Mullayarov. The heavy equipment operators led by A. Perekhrest had an equally difficult task: while leveling the path, they had to move some 800,000 cubic meters of earth in slices. They also had to cut trees and build secondary tracks. The people accomplished almost the impossible. In skilfully maneuvering their equipment the specialists from the Order of Lenin Glavsibtruboprovodstroy /Main Administration for the Construction of Pipelines in Siberia/ increased their 24-hour "step" to 15 kilometers.

Many collectives did an outstanding job in building the "Tyumen arm". But out of the best we must recognize the 5th and 11th administrations of the Severtruboprovodstroy /Northern Pipeline Construction/ Trust that is headed by A. Rekoshetov and V. Kernitskiy. They were the first to complete their assignments on the pipeline with a high quality.

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PIPELINE CONSTRUCTION

INTERNATIONAL NATURE OF WORK FORCE DISCUSSED

Kiev RABOCHAYA GAZETA in Russian 22 Jun 83 p 3

/Article by I. Litvin, RABOCHAYA GAZETA correspondent: "A Reliable Partner from Suomi"/

/Text/ The route of the Urengoy-Pomary-Uzhgord export gas pipeline takes it through the valleys and mountains of Ternopol, Lvov, Ivano-Frankovsk and the Transcarpathian oblasts; it can already be counted in three-digit numbers.

The director of the Ivano-Frankovsk board of the gas pipelines that are under construction, I. Prokipchuk, reports that, "in our section Soviet, German and Polish builders have already welded into a strand more than 330 kilometers of pipe. Nearly 300 kilometers of this distance have already been laid in the trench. The compressor stations and housing units are being successfully built."

Specialists from the German Democratic Republic are building a gas compressor station in Bogorodchany using a technology that has proven itself. This key facility was to have been completed in the first quarter of next year. But the pledges have been reexamined and it has been decided to finish the job by the 66th Anniversary of the October Revolution. The pace of work that has been achieved provides reason to believe that this goal will be reached.

It is not just specialists from the socialist nations that are directly participating in the construction of the transcontinental Urengoy-Uzhgorod gas pipeline. The Finnish firm Meteks, which supplies equipment with complete engineering support, has been working in the Soviet Union for many years. These contacts are reliable and mutually advantageous. As noted by the President of the Finnish Republic, Mauno Koivisto, during his visit to the USSR, these contacts will be strengthened and expanded.

The Suomi nation is supplying sheds for the compressor stations at many sections of the pipeline. The representative of the firm, Neffling Rauli Antero, visits the construction site in Bogorodchany every day. A highly skilled specialist, he is keeping an eye on the precision of the installation work and offering needed solutions when difficulties arise.

Neffling Rauli reports that "the German and Soviet specialists are doing an excellent job. For this reason I do not doubt that the project will be completed ahead of schedule. As a matter of fact, the entire pipeline will be completed early. Earlier I read a lot about this construction project. Our newspapers devote a lot of attention to it. They wrote a particularly lot about it when President Reagan placed an embargo of shipments of equipment to the Soviet Union. Our firm was also submitted to some pressure. But we did not give in to it. In Finland people believe that cooperation between nations not only is useful but serves the cause of peace. This is the policy being pursued by President Mauno Koivisto, in keeping with the historic line that was followed by Paasikivi-Kekkonen.

"Recently I heard," Rauli laughs, "that American radio stations are broadcasting that the pipeline is being built by prisoners. I do not know who would believe such nonsense. I am convinced that only true experts, who observe all technological norms quite strictly, are at work here."

We met with Rauli after his work day. Before starting our conversation, Rauli made the necessary notes in his journal and examined a blueprint. By the way, the builders say that in addition to doing a good job of deciphering technical documentation Rauli also quickly deals with the little problems that are encountered. On top of his desk rests a dictionary. The Finnish specialist is seeking to learn Russian as quickly as possible so that he can understand his Soviet colleagues even better.

"Generally speaking he has been acquainted with our nation for some time," reports a worker from the board of the gas pipelines that are under construction, O. Stasiv. "In Turka Rauli lived in a house not far from one that V.I. Lenin visited on a regular basis. He became interested in the life of Soviet people, and three years ago, while representing the Meteks firm, he worked as a chief engineer on the construction of the Tashkent caprolactam plant."

"I have a great deal of experience in working abroad," Neffling Rauli continues his conversation, "and I must say that specialists and workers and common people all share the desire to work quietly without fear of losing their job and to live happily beneath a peaceful sky.

"But you have a special situation. It is not just that the working conditions are better. I have never met such courteous, responsive and sincere people. I already have many Ukrainian friends. Not even the fact that I do not know their language can prevent us from understanding each other. But in the Ivano-Frankovsk museum of local lore, history and economy I have not been able to sort everything out right away. In this museum I have seen an ancient inventory such as was used in my country. I have seen how this area was formed. However, it will take several visits for me to understand everything."

The Bogorodchany compressor station will be completed ahead of schedule. And the engineer from Finland, Neffling Rauli Anterro, will leave to work on the construction of another gas pipeline in the Soviet Union. Through his actions he will reconfirm the durability of the economic ties between the two nations. The treaty of friendship between the Soviet Union and Finland has been in effect for 35 years. The mutually advantageous cooperation and labor work of such specialists as Neffling Rauli Anterro give strength to this treaty.

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PIPELINE CONSTRUCTION

EXPORT GAS PIPELINE STATUS REPORT

Kiev RABOCHAYA GAZETA in Russian 23 Jun 83 p 2

/Article by M. Baltyanskiy: "Urengoy-Uzhgorod: At the Finish Line" /

/Text / The builders of the Urengoy-Pomary-Uzhgorod pipeline have reached the final stretch of their task. Time is critical. Much remains to be done for the unique gas pipeline to operate at full capacity by the established time.

The finishing period includes not only the completion of the production assignments but also a check of the reliability of everything that has been done. This is also a moral test, which all participants in the construction work are seeking to successfully pass.

The creators of the pipeline through their diligence and hard work are reaffirming the principles of communist morality, the collective psychology of the working class and the international nature. This is exactly what was discussed in a speech given at the June (1983) Plenum of the CPSU Central Committee.

The Brave Bird of Peace

The bright crimson line that intersects the map in the left-hand corner separates sharply. The designers and builders see in this spot a symbolic similarity to an enormous bird, that has spread its two strong wings to fly. In Europe they are waiting for this brave bird of peace and good. Nobody can stop it.

"Although there were efforts," comments Nikolay Alekseyevich Ishutin, the director of the All-Union Order of the Labor Red Banner Scientific-Research and Design Institute for the Transport of Natural Gas. "The American President Reagan thought that his sanctions would slow the construction of the gas pipeline. As you can see, he was wrong. The construction of the Urengoy-Pomary-Uzhgorod gas pipeline not only was not delayed, but the work is proceeding ahead of schedule."

Ishutin speaks softly with dignity. He has every reason to speak in this manner. The collective of the institute that he manages has provided the builders with design and estimating documentation for the most complicated sections. It is comforting that the engineering logic that was first expressed on Whatman paper in the form of fantastical blueprints and estimates is now becoming a reality in the form of large industrial facilities. It is doubly gratifying to recognize that this logic of your comrades and colleagues is working directly to strengthen peace and friendship between people.

Specialists from Poland and the GDR are actively participating in the construction of the gas pipeline. The Polish builders arrived with their own technology - and the institute quickly redesigned facilities for them in their own designs. The German friends offered a portion of their solutions, which were also accepted and taken into consideration in the designs. This is promoting a significant speeding up of the construction. The future operators of the Bozhorodchany and Golyatin compressor stations will receive housing units and cultural and social facilities ahead of schedule this year. The creative cooperation is bringing something for everyone.

The institute director continues, "the cooperation is helping to bring people closer together in a spiritual sense. One can see how energetically the current issues are discussed by our specialists and their German and Polish comrades. And one is not amazed that they understand each other. And how could things be otherwise? Everything that is being done in the name of peace can be understood without translation. The chief engineers for the designs, B.V. Spektor, B.V. Tkachuk and G.P. Ukhov, who are working directly with the collectives from the brotherly nations, can tell us quite a bit about this. If the successful construction of the gas pipeline is perplexing to any of those who do not wish us well, for us this is a totally logical and natural matter.

The designers are rightly called the discoverers, for they are the first to see everything that becomes a reality. By the way, it is not just on paper that they are discovering things. During the designing and creation of the Urengoy-Pomary-Uzhgorod gas pipeline a new natural gas deposit was discovered near Kharkov. The institute quickly developed the working documentation for the construction of facilities for the deposit. And the new gas will soon enter the republic's gas supply system.

This special feature is also characteristic. The pipeline passes near many populated areas where natural gas was previously not available. Now it has become possible to remedy this situation. The builders have pledged to provide the workers of these areas with natural gas. The designers have not remained in debt - the institute collective has handed over the needed design and estimating documentation.

Ishutin glanced at the working map: "For our bird of peace to take off quickly and for its flight to be successful, we and the designers from the other institutes are carrying out a review of what we have done. This is very exacting and important work. But we must do it."

The builders have high praise for the work of the designers. The work is constantly receiving extensive recognition. In the fourth quarter of last year and the first quarter of this year the institute collective was twice given awards from the UkSSR Council of Ministers and the Ukrainian Trade Union for successes in the construction of the gas pipeline. Both of these bonuses were handed over to the Peace Fund. Such actions have become a tradition here. Last year the institute workers paid the equivalent of one day's wages into the Peace Fund.

The Energy of the "Workers' Relay Race"

There are 16 spread collectives and nine compressor station construction complex collectives working on the Ukrainian section of the gas pipeline. More than 200 industrial enterprises and republic transportation and design organizations are helping to fill orders for this unique pipeline. All of them are competing on the "workers' relay race" principle. A carefully thought-out system of moral and material incentives is being used to promote their initiative.

The republic headquarters for encouraging the construction of the gas pipeline, which was created under the Ukrsovprof /Ukrainian Council of Trade Unions/, is constantly improving the interactions of the trade union and economic organs in the process of the competition between the related organizations. It is also monitoring the fulfillment of socialist pledges and is concerned about the social and living conditions for the builders.

"When we add up the quarterly results it is often difficult to determine the winner," relates Mikhail Antonovich Zapolskiy, the secretary of the Ukrsovprof. "Many collectives are overfulfilling their assignments and there are more contenders for the awards than there are awards. The five monetary awards that were created by the UkSSR Council of Ministers and the Ukrsovprof are often insufficient to go around. This demonstrates how hard they are working on the pipeline. This shows how much creative energy is to be found in the "workers' relay race".

The energy of the "workers' relay race" has specific manifestations. Reports from the construction site which reach the republic headquarters on a regular basis attest to this. Almost 95 percent of the length of the Ukrainian section has been welded into a strand. Work on the projects started this year is proceeding well ahead of schedule, including the Grebenka and Barskiy compressor stations. The subelements of Ukrzapadneftegasstroy, Ukrtruboprovodstroy, Zaktruboprovodstroy and Lengazspetsstroy are operating

smoothly. In Kiev Oblast gas pipeline strands are already being tested; and in Khmel'nitskiy Oblast they are finishing welding the pipes into a strand. The Leningrad builders are close to the finish in Poltava and Cherkassy oblasts. The underwater crossings of the Dnepr, Ros, Southern Bug rivers and the overhead crossing of the Dnestr river have been completed ahead of schedule.

And here is some news from the related enterprises. More than a million tons of pipe, representing some 20,000 tons in excess of the plan, have been shipped to the construction site by the Khar'tsyk pipe plant. One third of the additional output was manufactured out of metal that had been conserved. This year the metal workers have mastered the production of large diameter pipe with an anti-corrosion coating, which will significantly lengthen its service life.

The Kiev Experimental Machine Plant and the Kakhovka Electrical Welding Equipment Plant have delivered various kinds of welding equipment, including the very newest BTS-142V pipe welding bases and the Styk welding complexes, to the builders.

In fulfilling their assignments for deliveries, the collectives of the Lvovpribor Plant, the Sumy Machine Building Production Association imeni M.V. Frunze, the Zhdanovo sea port, the Donetsk and Odessa railroad lines and the trucking industry are all operating smoothly.

Our friends from Poland and the GDR are following the example of the Soviet builders in their communist attitude toward work. A telegram just received from the section where the Polish builders are at work is noteworthy. The chief M. Pshychyna, the party organizer K. Zayents and the construction director D. Volskiy report that the first section has been completed and is perhaps ready for testing. Also, the tasks on this section have been completed ahead of schedule due to the extensively organized socialist competition. The Polish builders also report that during the month of June they will completely finish the next section.

"As we see it, the total picture of affairs on the pipeline is reason for satisfaction," reports M.A. Zapolskiy. "And it is very annoying to see those subelements that are unable to quicken their pace while competing in the 'workers' relay race' principle. This is particularly true for the Krivoy Rog and Yenakiyevo metallurgical plants, the Lutsk Instrument Building Plant, the Nikolayevka Lifting and Transportation Equipment Plant, the Ilitskiy Lubricating Equipment Plant in the Transcarpathian Oblast, which are not keeping up with their delivery plans for materials and equipment. The republic headquarters is of course taking steps to do something about this. But why, one asks, should this state of affairs be cause for alarm?"

This is not a rhetorical question. It must be responded to with highly disciplined work. As demanded by the decisions of the June (1983) Plenum of the CPSU Central Committee, so it is demanded by life.

Picking Up the Pace

Kiev, Lenin, 6, Ukrgazprom. From the office of the chief engineer V.P. Maksimov, who has been named chief of the headquarters for the construction of the gas pipeline.

"In the republic we are representing the customer," relates Maksimov. "We are making decisions on a broad range of questions of a production and domestic nature on the spot. The Ukrsovprof headquarters is helping us out in a most efficient manner."

Every Monday there are telephone conference calls between all sub-elements of the Ukrainian section for the construction of the gas pipeline in this office. Maksimov is precise in his evaluations. He praises some and wishes them success. Others he shames for lagging behind their neighbors and asks them what they need. Still others are criticized for delaying the delivery of equipment.

The last conference call, naturally, started with this year's compressor stations at Grebenka and Barskiy. Representatives from both of the boards reported that work was proceeding well and that they were ahead of schedule. Maksimov told them to keep up the good work. And what about things with the welders? Maksimov's face beams. The welders are also well ahead of schedule. Forty two kilometers of the pipeline remain to be welded into a strand. And that is all.

"In the third quarter we plan to complete the testing of the entire section. Our operating organizations are preparing for the start-up and adjusting work. The cutting in of the technological cross pieces is proceeding well."

Briefly, work is in full swing.

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PIPELINE CONSTRUCTION

BRIEFS

URENGOY NATURAL GAS--Nizhnyaya Tura, Sverdlovsk Oblast. The Sverdlovsk section of the Urengoy-Uzhgorod gas pipeline has been put into operation. The steel 458-kilometer pipeline, which has already received gas from the Polar region, has directed its powerful current over the Ural Mountains into the European portion of the USSR. "We have kept our word - we are handing the gas pipeline over ahead of schedule!" has been inscribed on a flag that decorates the construction site of the Lyalinskaya gas compressor station. Here last year were laid the first kilometers of the large diameter pipe. /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 19 Jul 83 p 1/ 8927

TYUMEN REPORT--An important event has taken place on the lead section of the Urengoy-Pomary-Uzhgorod export gas pipeline. The test of the powerful fuel artery, which passes through Tyumen Oblast, has been completed. All along the nearly 1,000-kilometer length the line has successfully withstood the high pressure of the natural gas that is coming from the gas field. The subelements of the medal-winning Glavsibtruboprovodstroy have completed their work a full six months ahead of schedule by completed the basic amount of their work. The collectives of Komsomolsktruboprovodstroy, Soyuzgazspetsstroy and Kuybyshevtruboprovodstroy trusts built the segments of the pipeline that were assigned to them in a similarly short period of time. /Text/ /Moscow PRAVDA in Russian 26 Jun 83 p 1/ 8927

LVOV REPORT--Slavskoye, Lvov Oblast. One of the final difficult barriers in the Carpathian Mountains has been overcome by the builders of the Urengoy-Pomary-Uzhgorod gas pipeline. Today the builders finished laying a three-kilometer steel strand over the Burmach Mountain. The trench was dug from the foot of the mountain to the steep slopes from two directions at the same time. In choosing this difficult version, the pipeline builders shortened their path by two kilometers and spared a large stand of trees from being cut down. /Text/ /Moscow TRUD in Russian 1 Jun 83 p 1/ 8927

TERNOPOL REPORT--The Urengoy-Pomary-Uzhgorod gas pipeline has overcome yet another difficult water barrier: yesterday a siphon was laid across the Zbruch River near the Ukrainian settlement Gusyatin in Ternopol Oblast. The siphon's length is 270 meters. Specialists from the Leningrad Administration for Underwater-Technical Work of the Soyuzpodvodtruboprovodstroy /All-Union Under Water Pipeline Construction/ Association have completed their work within very tight deadlines. The collective faces new challenges in the future - laying the reserve siphons on the Dnepr River and also the Sarantul River in the Udmurt ASSR. /Text/ /Moscow TRUD in Russian 21 May 83 p 1/ 8927

CROSSING THE BURMACH MOUNTAIN--The steel run of the Urengoy-Pomary-Uzhgorod gas pipeline has spanned the highest point in the Carpathian Mountains. This event was impatiently awaited along the entire pipeline. The Burmach Mountain with a height of 1,100 meters above sea level and with very steep cliffs represented the highest point on the map which the primary gas pipeline of the current five-year plan had to cross. The brigade headed by Vanik Babagyan joined with a reliable seam the junction on the very top. To it - this steel "autograph" - the welders Georgiy Ulantsyan, Petr Razumenyko, Viktor Ivanov and Safir Agiduyev and the machine operators of the pipelayers Miron Zadvorskiy, Viktor Mikhaylov, Yuriy Aralov and others who conquered the Burmach lent a hand. Now the builders face another major event - meeting up with the collectives from Ivano-Frankovsk, Lvov and Transcarpathian spreads. This meeting will be seen as the completion of laying the pipeline through the Ural Mountains. /Text/ /Moscow IZVESTIYA in Russian 6 Jun 83 p 2/ 8927

MARI ASSR REPORT---Zvenigovo, Mari ASSR. The builders of the Urengoy-Pomary-Uzhgorod gas pipeline have announced that they are ready to undertake the forced crossing of the Volga River. All work has been completed ahead of schedule to lay the two-kilometer siphon on the bottom of the river. /Text/ /Moscow TRUD in Russian 20 Jul 83 p 1/ 8927

VINNITSA REPORT--The subelements of the Ukrtruboprovodstroy Trust /Ukrainian Pipeline Construction Trust/, which is working on the Vinnitsa section of the Urengoy-Uzhgorod gas pipeline, have won an important labor victory. They have completed laying the linear portion of the pipeline, a distance of 173 kilometers, ahead of schedule. The honor of welding the "red joint" on the border with Khmelnytskiy Oblast went to the combined brigade headed by communist Ya. I. Kopytko. The competition for the right to perform this honorary operation, which he initiated, speeded up all of the work. The Vinnitsa section is not only the longest of the sections being laid by the Ukrainian builders, but is also one of the most difficult on the entire pipeline. Within the oblast it was many times necessary to cross highways and railroad tracks and all sorts of underground utilities. The Southern Bug River, a large water barrier, had to be crossed. Hydraulic tests of individual sections of the pipeline under pressure have already started. /Text/ /Kiev PRAVDA UKRAINY in Russian 12 Jun 83 p 1/ 8927

URENGOY-UZHGOROD PIPELINE TESTED--Construction of the Urengoy-Pomary-Uzhgorod gas pipeline is coming to an end. The builders have only a few more kilometers remaining until they reach the final seam. More and more reports are coming in about the completion of tests on the finished sections. Sections of the pipeline which pass through the Mordovian ASSR, the Tatar ASSR and Sverdlovsk Oblast have successfully passed their tests for durability and reliability. The sections of the pipeline that were built by the collectives of Vostoknefteprovodstroy and Uralneftegazstroy are now ready to accept the West Siberian natural gas. As reported in the main dispatch administration of the USSR Ministry for the Construction of Petroleum and Gas Industry Enterprises, nearly 2,800 kilometers of the Urengoy-Pomary-Uzhgorod gas pipeline have already passed their examinations. The construction of more than 1,000-kilometer section of the pipeline, which passes through the Ukraine, is coming to an end. One fourth of the pipeline is ready for operation. /Text/ /Moscow PRAVDA in Russian 23 Jun 83 p 1/ 8927

MORE ON TERNOPOL--The linear portion of the 137-kilometer section of the Urengoy-Pomary-Uzhgorod gas pipeline has been completed by builders from the GDR by some six months ahead of schedule. Yesterday on the banks of the Seret River near the village of Ulashkovitsy in Ternopol Oblast the Germans and Ukrainian specialists welded the "red" seam. /Text/ /Moscow GUDOK in Russian 8 Jun 83 p 1/ 8927

VOLGA REGION REPORT--Urengoy natural gas has reached the Volga River region: yesterday at the site of the Arskaya compressor station a torch was lit. The section of the Urengoy-Pomary-Uzhgorod gas pipeline, which passes through the Tatar ASSR, has been put into operation a full six months ahead of schedule. The builders have assured the CPSU Central Committee, the Presidium of the USSR Supreme Soviet, the USSR Council of Ministers that they will complete the next pipeline, the Urengoy to Center pipeline, ahead of schedule as well. /Text/ /Moscow SOVETSKAYA ROSSIYA in Russian 7 Aug 83 p 1/ 8927

TAMBOV REPORT--The state commission has signed the document accepting for operation the Tambov section of the Urengoy-Pomary-Uzhgorod gas pipeline. On this 137-kilometer stretch of the pipeline work has been completed ahead of schedule and with high quality. The relief of the geography in the northern part of Tambov Oblast, through which the pipeline passed, is not considered particularly complicated, but the builders did not find it easy to conquer it. The pipeline builders had to contend with rivers, floodplains and ravines and to lay pipes beneath active railroad lines and highways. The gas pipeline builders were helped considerably by the unified contract of the spread organization. /Text/ /Moscow SEL'SKAYA ZHIZN' in Russian 14 Aug 83 p 1/ 8927

MARI ASSK PIPELINE--A more important link in the Urengoy-Pomary-Uzhgorod gas pipeline has been put into operation. Yesterday a section of underground pipeline, which passes through the Mari ASSK, was put into operation. The flame of the blue fuel was ignited at the construction site of the central compressor station, the Pomary compressor station. The builders have promised that they will spare no effort to fulfill new assignments. They have pledged to complete the next pipeline - the Urengoy-Center pipeline - ahead of schedule. /Text/ /Moscow SOVETSKAYA ROSSIYA in Russian 9 Aug 83 p 17 8927

NORTHERN ARM OF EXPORT GAS PIPELINE--On the northern arm of the transcontinental Urengoy-Pomary-Uzhgorod gas pipeline some 452 kilometers of its length have been hooked into the unified gas transport system of the Soviet Union. One of the key sections of this powerful gas pipeline has started operating. The first millions of cubic meters of the Siberian gas have substantially augmented the fuel and energy balance of the economic complex. Altogether more than 3,500 kilometers of the gas pipeline have already been tested and prepared to receive natural gas. On the mountainous slopes of the Carpathian Mountains the finishing work on the final ten kilometers is now underway. In several hours the linear portion of the gas pipeline, with a length of 4,451 kilometers, will be completed. /Text/ /Moscow IZVESTIYA in Russian 3 Jul 83 p 17 8927

URENGOY GAS REACHES EUROPE--Nizhnyaya Tura, Sverdlovsk Oblast. The Sverdlovsk section of the Urengoy-Pomary-Uzhgorod gas pipeline has been put into operation. The 458-kilometer steel river, having received natural gas from the polar region, has directed its powerful flow through the Ural Mountains into the European portion of the Soviet Union. /Excerpts/ /Moscow GUDOK in Russian 19 Jul 83 p 17 8927

GORKIY OBLAST REPORT--Pochinki, Gorkiy Oblast. The largest construction project of the fuel and energy complex - the Urengoy-Pomary-Uzhgorod gas pipeline - is already at work meeting the needs of the Soviet Union. Every day through the pipes connecting the operating arteries the pipeline augments the resources of the industrial centers with millions of cubic meters of fuel. Today West Siberian gas has reached Gorkiy Oblast. At the Pochinki compressor station this event was the subject of a meeting where the members of a state commission reported to the builders that the 140-kilometer Gorkiy section of the fuel artery has been accepted for industrial use with an excellent evaluation. /Text/ /Minsk SEL'SKAYA GAZETA in Russian 10 Aug 83 p 17 8927

MORDOVIAN ASSR REPORT--Krasnoslobodsk , Mordovian ASSR. Today Siberian gas filled the section of the Urengoy-Pomary-Uzhgorod gas pipeline that extends from the Sura River to the Mokshi River. A state commission has signed a document accepting the 220-kilometer section of the pipeline, which passes through the Mordovian ASSR, for operation. A symbolic gas torch was suspended above the pipeline to mark the important labor victory of the builders. The production assignment was fulfilled some five months ahead of schedule by the builders; and their work was rated as being of the highest quality. The kilometers that they have conquered were not easily won. The pipeline is situated some distance from the industrial centers in difficult terrain containing a multitude of swampy forests, flooded sections and rivers. The pipelaying work was accomplished for the most part during the spring bad roads season. The builders had to deal with numerous difficulties; they accomplished this by applying their professional skill and a well-defined organization of labor. On the banks of the Rudnya River a meeting was held today to mark the completion of the section. The builders, drivers, installers and machine operators came together here. The brigade leader of the welders N. Saustyan from the Moscow Welding and Installation Trust commented that the success of the pipeline builders is the result of self denial and the patriotism of the builders, who have successfully fulfilled the assignment of their Motherland. Urengoy gas will serve the world. The meeting participants promised that they were prepared to fulfill new assignments for the construction of ahead-of-schedule gas pipelines.

/Text/ /Minsk SEL'SKAYA GAZETA in Russian 10 Aug 83 p 1/ 8927

WITH A MARK OF 'EXCELLENT'--The way for Siberian gas to the territory of the Ukraine has been opened up: yesterday the state commission accepted with a mark of "excellent" the 339-kilometer Kursk Section of the Urengoy-Pomary-Uzhgorod Mainline for industrial operation. Builders from the Trubovodstroy Trusts from Krasnodar and Rostov-on-Don arrived at the designated goal almost a half-year ahead of schedule. This labor victory did not come easy to them, although they laid the gas pipeline in densely populated, inhabited localities. Ravines and gorges, the wide, swampy bottom lands of the Seym and other rivers, numerous transport arteries, including railroads and highways, retarded the operations of the builders. High professional skills and an improved working organization were required. Over the entire length of the right-of-way section--from Orlov Oblast to Sumy Oblast--three engineering assembly-units were created. Therein various groups, by manifesting workers' mutual assistance, jointly toiled for the sake of attaining the high end result. A meeting was held on the occasion of the section being introduced into operation at the Kursk gas-compressor station. (TASS) /Excerpts/

/Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 6 Aug 83 p 1/ 2384

THEY KEPT THEIR WORD --NIZHNYAYA TURA (Sverdlovsk Oblast), 18 July. The Sverdlovsk Section of the Urengoy-Pomary-Uzhgorod Gas Pipeline has been put into operation. After receiving gas from beyond the Polar Circle, this 458-kilometer steel course sends it in a mighty flow across the Ural Mountains into the European part of the country. The state commission awarded a mark of "excellent" to the skills of hundreds of builders. They were more than half a year ahead of the schedule for laying this mainline. They had to work far from transport facilities, under the complex conditions of the Northern Urals, with their impassable swamps and bogs, talga, and mountain ridges. [By N. Potapova, TASS correspondent] [Excerpts] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 19 Jul 83 p 1] 2384

METAL FOR THE NORTH--ZHDANOV (Donetsk Oblast), 22 Aug (TASS). Construction of the "3000" thick-sheet mill is proceeding at a speeded-up pace at the Zhdanovskiy Metallurgical Plant imeni Il'ich. Construction of this new production facility, the first stage of which will be turned over for operation in December, has entered upon an important phase: the first of three sub-stations has been put under pressure for an empty run of the custom-built equipment for turning out frost-proof, heat-resistant rolled metal. It is intended for the manufacture of large-diameter, petroleum and gas pipes. [Text] [Moscow PRAVDA in Russian 23 Aug 83 p 2] 2384

FOR GAS RIGHTS-OF-WAY--The machine builders of the Sumskiy Production Association imeni M. V. Frunze have completed a responsible task ahead of schedule--delivery of 37 gas-pumping units for compressor stations of the Urengoy-Pomary-Uzhgorod Export Gas Pipeline. These units are characterized by an increased capacity and are capable of operating without breakdown at air temperatures ranging from --50 to +45 degrees C. They consist of individual blocks, placed in metal containers and therefore do not require major buildings. During the present year the machine builders have pledged to ship out to the builders of the main gas pipelines another 18 units for pumping this fuel-type raw material. [By A. Vyatkin] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 19 Aug 83 p 2] 2384

WITHIN AN INTEGRATED SYSTEM--The country's petroleum regions: Western Siberia, the Volga Region, Northern Caucasus, and Azerbaijan are connected among themselves by an integrated network of main petroleum pipelines. This became a reality a few days ago, when the first few thousand tons of fuel from Groznyy, the capital of the Chechen-Ingush ASSR, arrived through the steel-enclosed channel at Baku. The start-up of the mainline, extending in length for many hundreds of kilometers, has been awaited with impatience by the workers of the Baku oil refineries. Radical renovation of the latter already now permits the refinement of considerably more crude at these same sites. At the same time there has been a sharp improvement in the quality of petroleum products. [By A. Rasulov] [Text] [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 12 Aug 83 p 1] 2384

TRIUMPH ON THE RIGHT-OF-WAY--The main section of the Urengoy-Pomary-Uzhgorod Gas Pipeline, extending across the territory of Tyumen Oblast, has begun operating. This mainline, which is 1,043 kilometers long, has received natural gas from beyond the Polar Circle. A great labor victory has been gained: according to the schedule, this mainline should still be under construction, but it has already passed its exam for strength and hermetic qualities with flying colors. "The quality of the welding and insulation work is faultless"--such was the unanimous

opinion of the members of the state commission. The control panel of a crane unit. The operator presses some buttons, and a fiery-red tongue of flame flares up: a mighty river of Urengoy gas rushes into the new, underground course. A scarlet panel is unveiled above those assembled there, bearing the following inscription: "Motherland! Your task has been completed ahead of schedule!" It took only 200 days--only half the number provided for by the schedule--to perform the work between the first and last joint on the gas pipeline's Tyumen section. [Excerpts/ [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 10 Jul 83 p 1] 2384

STEPS OF THE GAS RIGHT-OF-WAY--TAMBOV, 12 Aug. The official act of accepting for operation the Tambov section of the Urengoy-Pomary-Uzhgorod Gas Pipeline was signed today by the state commission. Work on this section, which has a length of 137 kilometers, was completed ahead of schedule and with a high degree of quality. The local topography in the northern part of Tambov Oblast, where the right-of-way runs through, is not considered to be particularly complicated, but it did not simply yield to the builders. The right-of-way workers had to overcome rivers, bottom lands, and ravines; they had to lay pipes under congested railroad tracks and motor-vehicle roads. The builders of this gas artery were aided greatly by the comprehensive, engineering-flow type of integrated contract. Thanks to this, a high degree of installational productivity was attained--a kilometer of completed gas pipeline per day. Today the section's best builders assembled at a meeting which took place in the Morshanskiy Rayon. Those who spoke there noted that they had kept their word as workers--the task had been completed ahead of schedule. The right-of-way workers provided assurances that they would apply all their skills, strength, and experience to successfully carry out the tasks of building the five-year plan's other fuel arteries as well. [By TASS correspondent V. Stepanov/ [Text/ [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 13 Apr 82 p 1] 2384

FOR THE DRUZHBA [Friendship] PETROLEUM PIPELINE--Workers in the gas industry have an acute need for pipes capable of withstanding great pressure. They are made of special high-carbon steel by the hot-rolling method. These pipes have become widely used in the construction of the Druzhba Petroleum Pipeline. Now pipes manufactured at the Karagandinskiy Metallurgical Combine will be sent to this extremely important construction project of our country. They can withstand an operating pressure of as much as 130 atmospheres, and they also have other high-quality characteristics. [By S. Timirbayev/ [Text/ [Moscow SOTSIALISTICHESKAYA INDUSTRIYA in Russian 31 Aug 83 p 2] 2384

EXAM FOR STRENGTH--BELOYARSKIY (Tyumen Oblast), 25 Aug (TASS). At the Verkhnekazymskaya Compressor Station, which is being built on the main section of the Urengoy-Pomary-Uzhgorod Gas Pipeline, tests on the high-pressure pipelines have been begun ahead of schedule. According to the normative calculations, the pipelines should still be in the process of being installed. But the group of the Kazymgazpromstroy, as a result of improving their labor organization and utilizing the large-block method of construction, was able to install the utility lines almost one and one-half times more rapidly. This advanced group has pledged to turn the station over for operation in September--a quarter previous to the planned date. [Text/ [Moscow PRAVDA in Russian 26 Aug 83 p 1] 2384

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